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November 1990

Williams®
ELECTRONICS GAMES, INC.

OPERATIONS MANUAL

Game Adjustments
Parts Information
Testing and Problem Diagnosis

FUNHOUSE Jumper Chart

	W14	W15	W16	W17	W18
American*	In	In	In	In	In
French	In	In	In	Out	In
German	In	In	In	In	Out

* All of the above jumpers in, or two or more of these cut

FUNHOUSE Solenoid Table

Sol. No.	Function	Solenoid Type	Wire Color	Connections	Driver Trnstr	Solenoid Part Number Flashlamp Type
01	Outhole	High Power	Vio-Brn	J130-1	Q82	AE-26-1200
02	Ramp Diverter	High Power	Vio-Red	J130-2	Q80	AE-26-1200
03	Kickbig	High Power	Vio-Orn	J130-4	Q78	AE-26-1500
04	Tunnel Kickbig	High Power	Vio-Yel	J130-5	Q76	AE-26-1200
05	Trap Door Open	High Power	Vio-Grn	J130-6	Q64	AE-26-1500
06	Trap Closed	High Power	Vio-Blu	J130-7	Q66	SM1-26-600
07	Knocker	High Power	Vio-Blk	J130-8	Q68	AE-23-800
08	Multi-ball Release	High Power	Vio-Gry	J130-9	Q70	A-14189
09	Upper Left Jet Bumper	Low Power	Brn-Blk	J127-1	Q58	AE-26-1200
10	Upper Right Jet Bumper	Low Power	Brn-Red	J127-3	Q56	AE-26-1200
11	Lower Jet Bumper	Low Power	Brn-Orn	J127-4	Q54	AE-23-1200
12	Left (sling) Kicker	Low Power	Brn-Yel	J127-5	Q52	AE-26-1500
13	Right (sling) Kicker	Low Power	Brn-Grn	J127-6	Q50	AE-26-1500
14	Steps Gate	Low Power	Brn-Blu	J127-7	Q48	SZ-34-3500
15	Trough	Low Power	Brn-Vio	J127-8	Q46	AE-26-1200
16	Dummy Eject Hole	Low Power	Brn-Gry	J127-9	Q44	AE-26-1500
17	3 Blue Flashers	Flasher	Blk-Brn	J126-1	Q42	#906
18	Dummy Flasher	Flasher	Blk-Red	J126-2	Q40	#906
19	2 Clock Flashers	Flasher	Blk-Orn	J126-3	Q38	#906
20	2 Superdogs	Flasher	Blk-Yel	J126-5	Q36	#906
21	Mouth Motor	Special	Blu-Grn	J126-6	Q28	A-13997
22	Up/Down Driver	Special	Blu-Blk	J126-7	Q30	C-13963
23	3 Red Flashers	Special	Blu-Vio	J126-8	Q34	#906
24	3 Clear Flashers	Special	Blu-Gry	J126-9	Q32	#906
25	Eyes Right	Special	Blu-Brn	J122-1	Q26	SM-30-1100
26	Eyelids Open	Special	Blu-Red	J122-3	Q24	SM-30-1100
27	Eyelids Closed	Special	Blu-Orn	J122-4	Q22	SM-30-1100
28	Eyes Left	Special	Blu-Yel	J122-5	Q20	SM-30-1100
	General Illumination Circuits					
01	Upper Backglass	G.I.	Wht-Brn	J120-7	Q18	#555
02	Front Playfield	G.I.	Wht-Vio	J119-1	Q10	#555
03	Rear Playfield	G.I.	Wht-Yel	J121-9	Q14	#555
04	Center Backglass/Rt Rear Pfd	G.I.	Wht-Orn	J120-8	Q16	#555
05	Top Playfield	G.I.	Wht-Grn	J120-10	Q12	#555
	Lower Right Flipper		Blu-Yel	J109-7		FL-11630
	Lower Left Flipper		Gry-Yel	J109-5		FL-11630
	Upper Left Flipper		Gry-Yel	J109-5		Fl-11753

FUNHOUSE

RUDY'S FUNHOUSE RULES

OBJECT

Take control of the FUNHOUSE from Rudy, the Dummy, by putting him to sleep. Put Rudy to sleep by advancing the FUNHOUSE clock to MIDNIGHT. Shots that advance the Clock are the Jet Bumpers, the Center Ramp, and the Wind Tunnel.

MULTI-BALL™

At 11:30, on the clock, a LOCK is enabled. Lock a ball and the clock will advance to 11:45. LOCK the next ball and the clock will advance to 12:00 putting Rudy to sleep. While Rudy is sleeping, shoot a ball into his OPEN MOUTH to start Multi-ball.

MILLION PLUS

While in Multi-ball, shoot the ball into the TRAP-DOOR for 2 MILLION points. The TRAP-DOOR will close. Shoot a ball around the Center Ramp to REOPEN the TRAP-DOOR for 3 Million points, 4 MILLION points etc..

MYSTERY MIRROR

There are 6 AWARDS on the MYSTERY MIRROR. Hitting Rudy in the jaw lights the AWARD LAMP. Hitting the WIND TUNNEL collects the value on the mirror. The value is changed by the JET BUMPERS.

LEFT BALL SHOOTER

The FUNHOUSE STEPS are lit by entering the MANHOLE to the RIGHT of the JET BUMPERS. Making the CENTER RAMP will divert the ball to the LEFT BALL SHOOTER.

SKILL SHOT

From the right plunger, shoot the ball BEHIND Rudy's head to collect Rudy's HIDEOUT BONUS.

Contents

Playfield Shots 1

Section 1 - Game Operation & Test Information

FUNHOUSE (System WPC) ROM Summary 1-1
Connector & Component Identification 1-2
FUNHOUSE Circuit Boards 1-2
Figure 1. Locations Diagram- Game Circuit Boards and Major Mechanisms . . . 1-3
FUNHOUSE Game Control Locations 1-4
Figure 2. Pinball Game Control Locations 1-4
Pinball Game Assembly Instructions 1-5
Figure 3. Pinball Assembly, Playfield Pitch Angle, and Leg Levelers Detail . . . 1-5
Game Operation 1-7
Menu System Operation 1-9
Main Menu 1-9
Adjustment Menu 1-10
Standard Adjustments Menu 1-10
Feature Adjustments 1-14
Pricing Adjustments 1-16
Pricing Table 1-18
H.S.T.D. Adjustments 1-19
Printer Adjustments 1-20
Bookkeeping Menu 1-21
Main Audits 1-21
Earnings Audits 1-21
Standard Audits 1-22
Feature Audits, and Histograms 1-23
Time-Stamps 1-24
Printouts Menu 1-25
Test Menu 1-26
Switch Edges and Switch Levels Test 1-26
Single Switch Test and Switch Matrix Table 1-27
Solenoid Test 1-28
Flasher Test 1-28
Solenoid Table 1-29
General Illumination Test 1-30
Sound and Music Test 1-30
Single Lamp, All Lamp, and Flasher and Lamp Test 1-31
Lamp Matrix 1-32
Display Test and Rudy Test 1-33
Trap Door Test 1-34
Utilities Menu 1-35
Clear Audits, Clear Coins, Reset H.S.T.D., Set Time & Date
Custom Message, Set Game I.D., Factory Adjusts 1-35
Factory Reset 1-36
Presets 1-36
Game Difficulty Table for U.S./Canadian & French Games 1-37
Game Difficulty Table for German/European Games 1-37
Preset U.S./Canadian Games 1-38
Preset German/European Games 1-40
Preset French Games 1-41
Problem Analysis 1-42
CPU Board Error Codes 1-43
Maintenance Information 1-44
Fuse List 1-45

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Contents

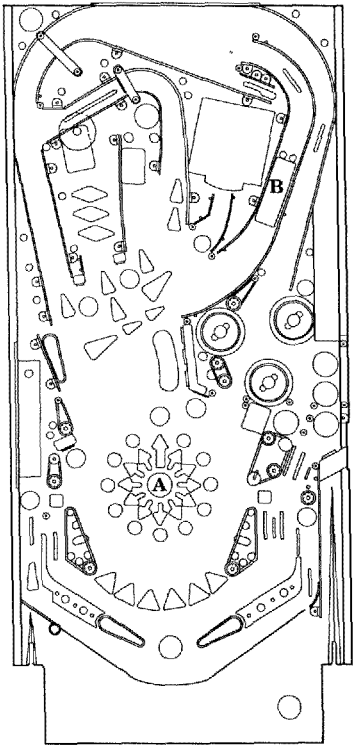
Section 2 - Game Parts Information

Locations Diagram - Game Circuit Boards and Major Mechanisms 2-2
Audio Board 2-3
CPU Assembly 2-4
CPU Board 2-5
Power Driver Assembly 2-6
Power Driver Board 2-7
Display Driver Assembly 2-8
Dual Display 2-9
Opto Switch Assembly 2-10
High Current Driver 2-11
Lamp Boards 2-12
Ball Shooter Lane Feeder, Outhole Kicker 2-13
Right Flipper 2-14
Left Flipper 2-15
Jet Bumpers 2-16
Jet Bumpers, Stand-up Targets 2-17
Kickers (Slingshots) 2-18
Trough, Knocker 2-19
Kicker, Kickbig 2-20
Loop Assembly, Drain Assembly 2-21
Head Assembly 2-22
Eject Assembly, Jaw Drive 2-24
Diverter 2-25
Trap Door Mech. 2-26
Ball Dispenser 2-27
Ramps 2-28
Ball Shooter Assembly 2-29
Coin Door Interface 2-30
Posts 2-31
Unique Parts 2-32
Backbox Parts 2-33
Playfield Parts 2-34
Lamp Locations and Matrix 2-36
Switch Locations and Matrix 2-38
Solenoid Location 2-40
Rubber Ring Locations 2-41

Section 3 - Wiring Diagrams And Schematics

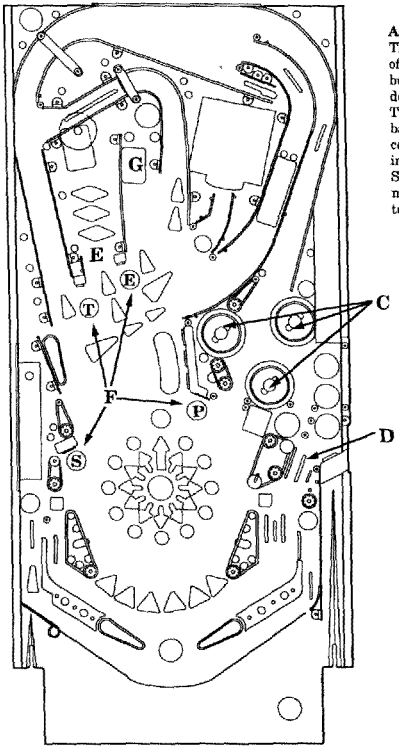
Flipper Wiring 3-2
Opto Switch Schematic 3-3
High Current Driver Schematic 3-4
Coin Interface Board Schematic 3-5
CPU Board Schematic 3-6
Power Driver Board Schematic 3-7
Audio Board Schematic 3-10
Display Driver Board Schematic 3-12
Backbox Wiring 3-13
Power Wiring 3-14
Solenoid Wiring 3-15
Interboard Wiring 3-16

FUNHOUSE
Object of the Game



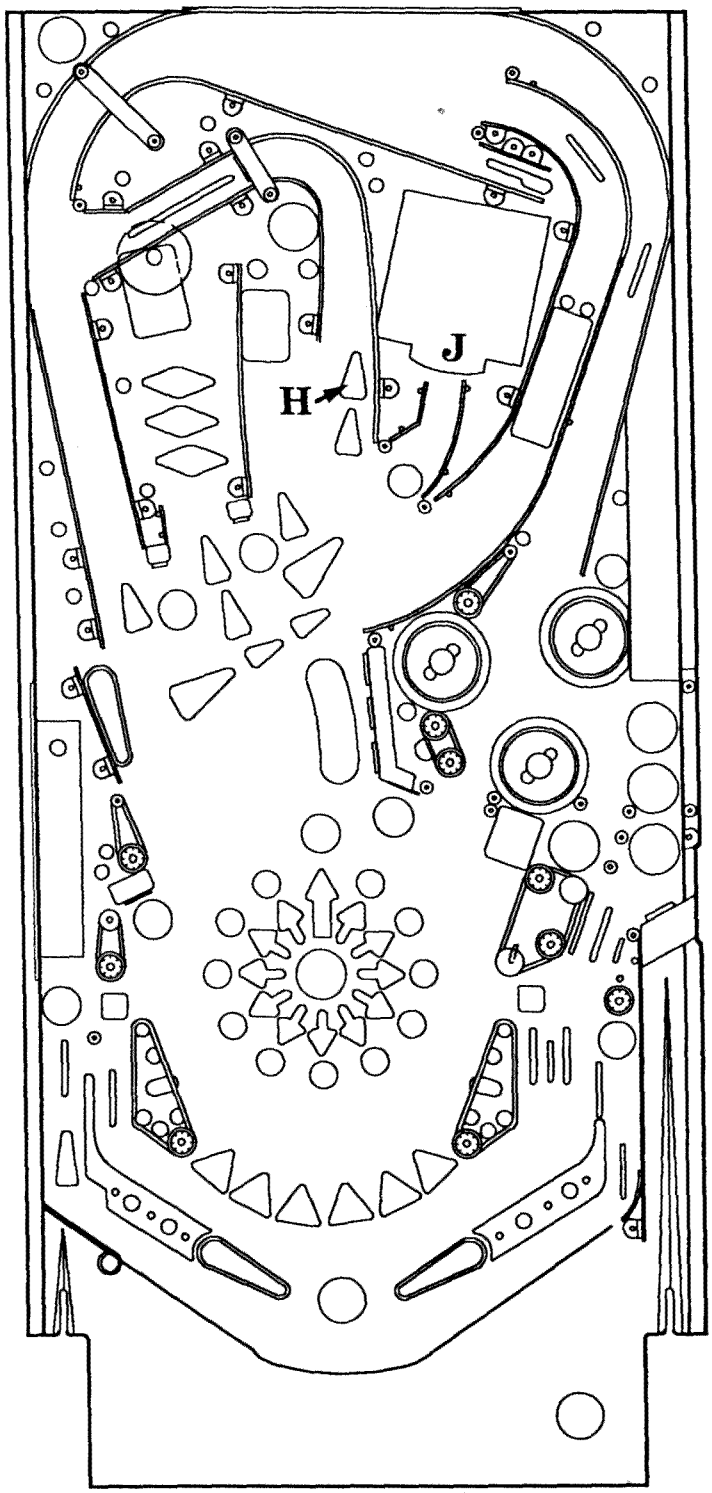
Object of the Game:
The object of the game is to move the time on the clock (A) to Midnight. At Midnight Rudy, the dummy, falls asleep and the player can amass large points by shooting into the "secret" trap door (B).

FUNHOUSE
Advancing the Clock



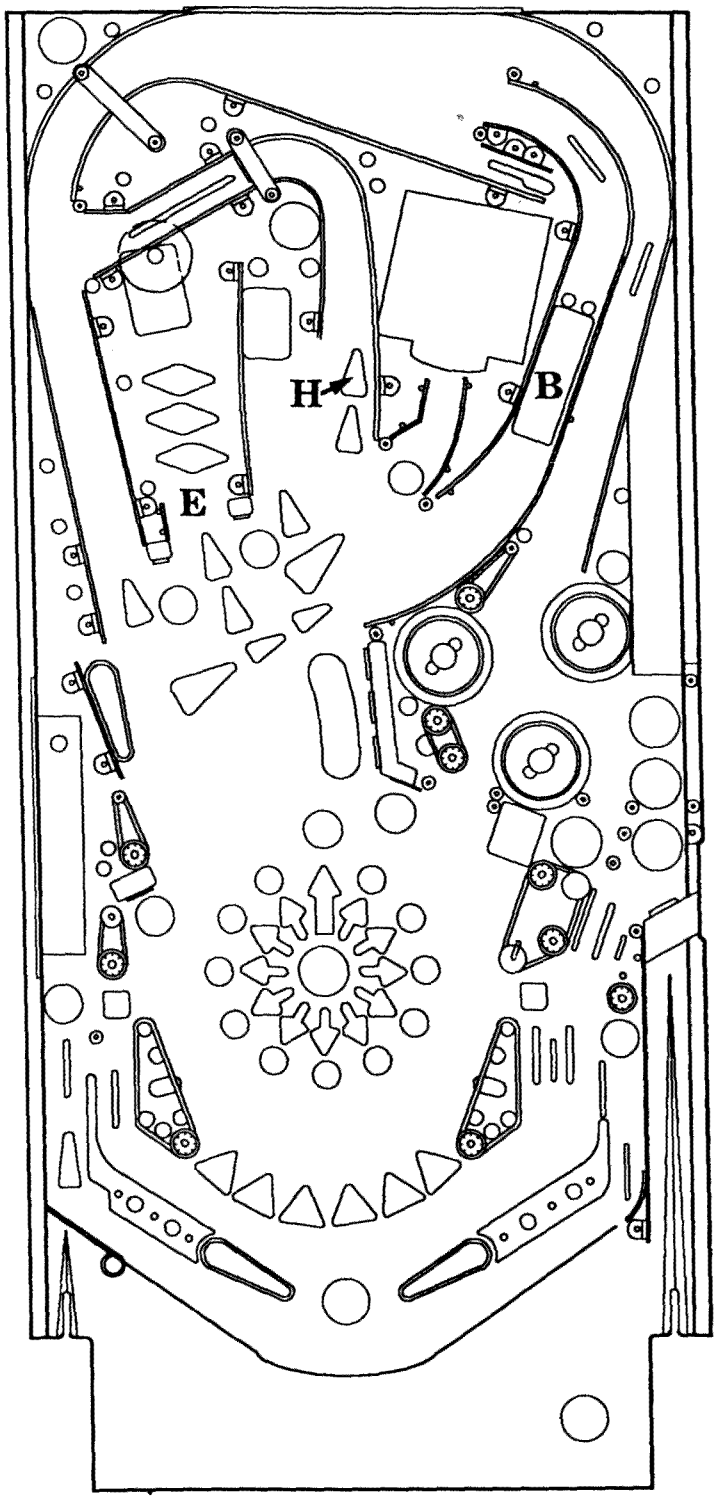
Advancing the Clock:
The clock is advanced in differing amounts of time by different playfield shots. The jet bumpers (C) award 0, 5, or 10 minutes depending if they are off, on, or flashing. The jet bumpers are lit on a single ball basis by the jet bumper lane at (D). The center ramp (E) advances the time in an incrementing single ball basis. The four S-T-E-P targets (F) advance the clock by 5 minutes on each hit. Falling into the wind tunnel (G) moves the clock by 15 minutes.

FUNHOUSE
Multi-ball ™



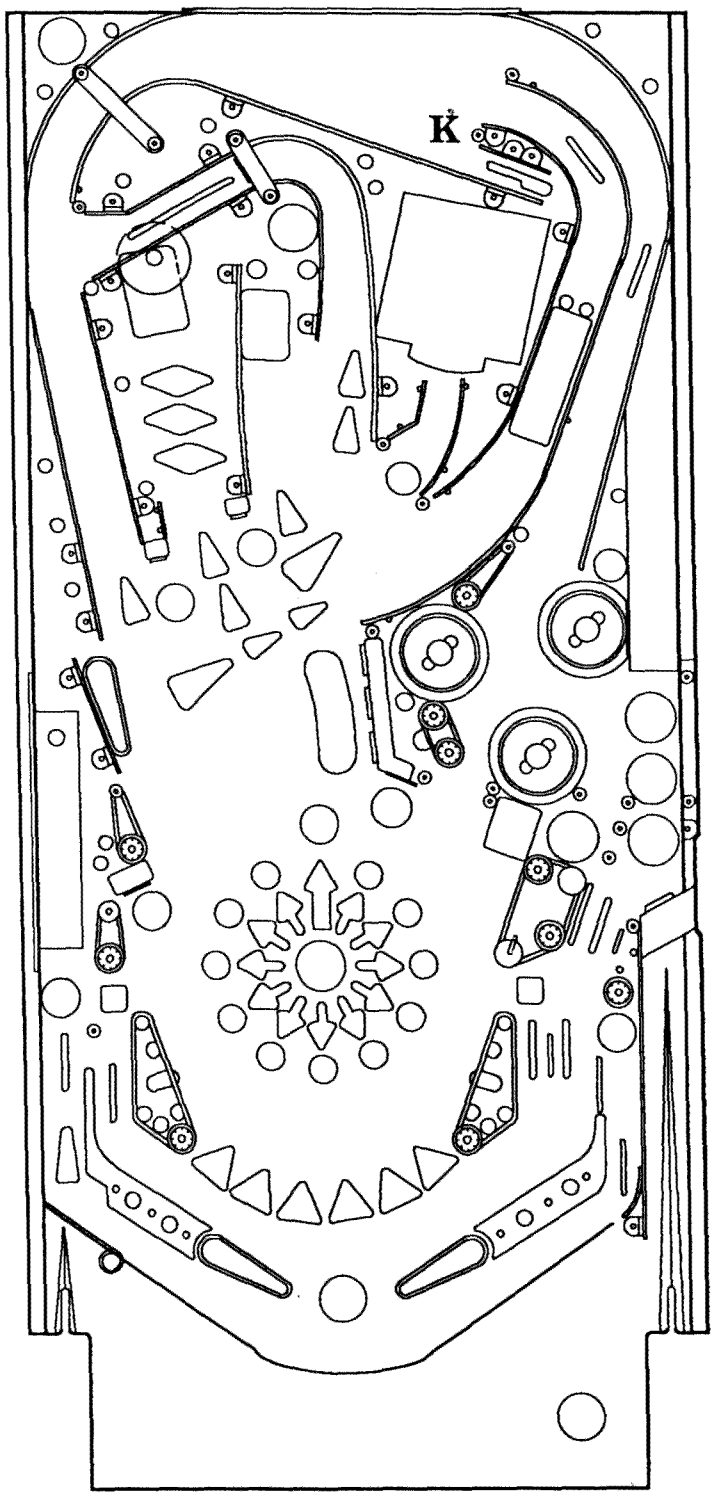
Multi-ball™:
Once the clock has been advanced to 11:30 a lock will light at (H). The player then locks a ball and the clock moves to 11:45. Another ball is served. The lock lights remain lit and another ball may be locked immediately. Once the second ball is locked the clock moves to 12:00 and the dummy falls asleep. Another ball is served and the player must shoot that ball into the dummys open mouth! (J). The dummy then wakes up and spits out the ball thus starting Multi-ball™.

FUNHOUSE
Million Plus ™



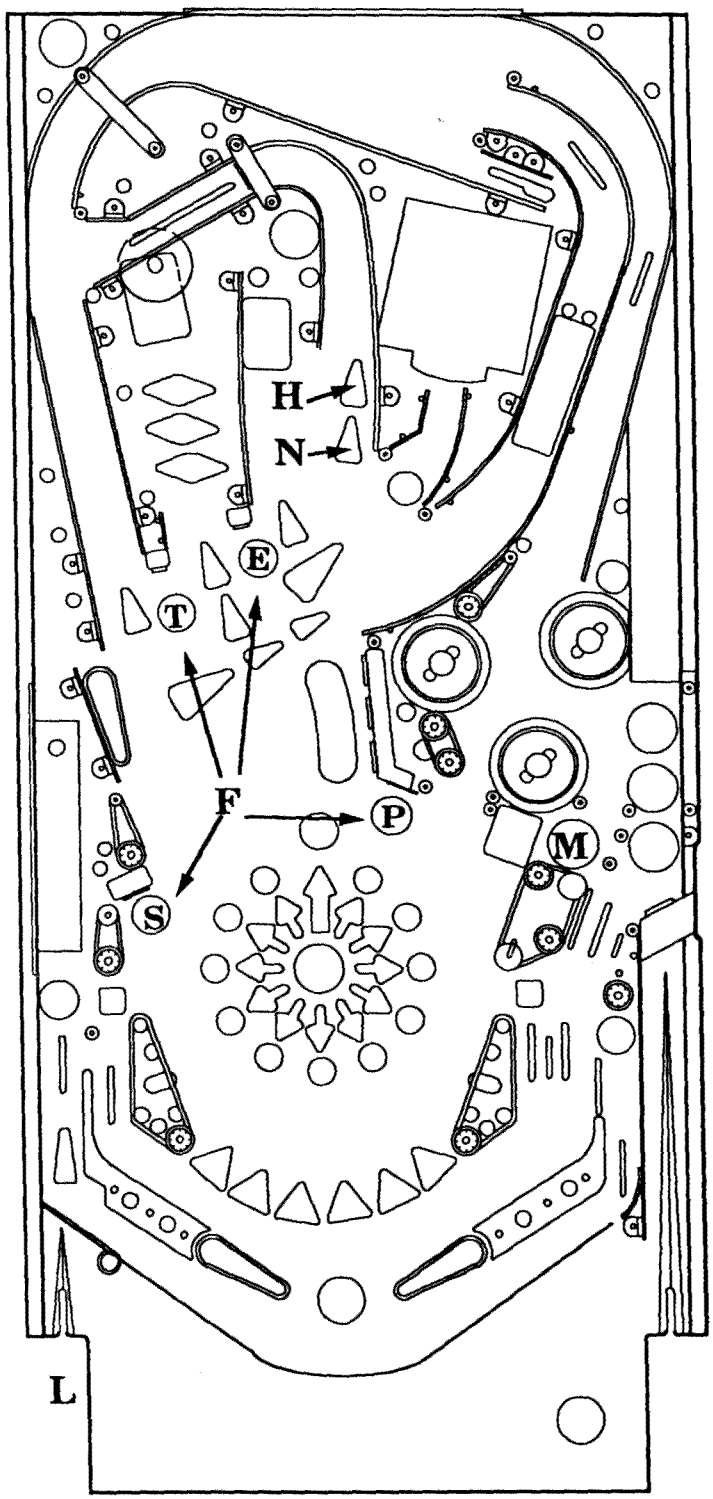
Million Plus ™:
At the start of multi-ball the secret trap door at (B) opens immediately. While in multi-ball the first shot into the trap door scores 2 million points. After the first shot into the trap the door closes. It can be re-opened by making the ramp shot at (E) . The second shot into the trap door scores 3 million points. The third shot 4 million points etc. . If the player successfully scores a Million Plus shot and then loses 2 balls the trap door closes and a new starting time is set on the clock to restart the game sequence. If the player loses 2 balls before scoring a Million Plus shot, the trap door will close, and the lock light at (H) will come on. The player can then lock the remaining ball from multi-ball for a retry at Million Plus. The lock light is on a timer. If the player cannot lock the ball in time, or loses the ball, the game sets a new starting time on the clock for a return to normal game play.

FUNHOUSE
Right Side Plunger



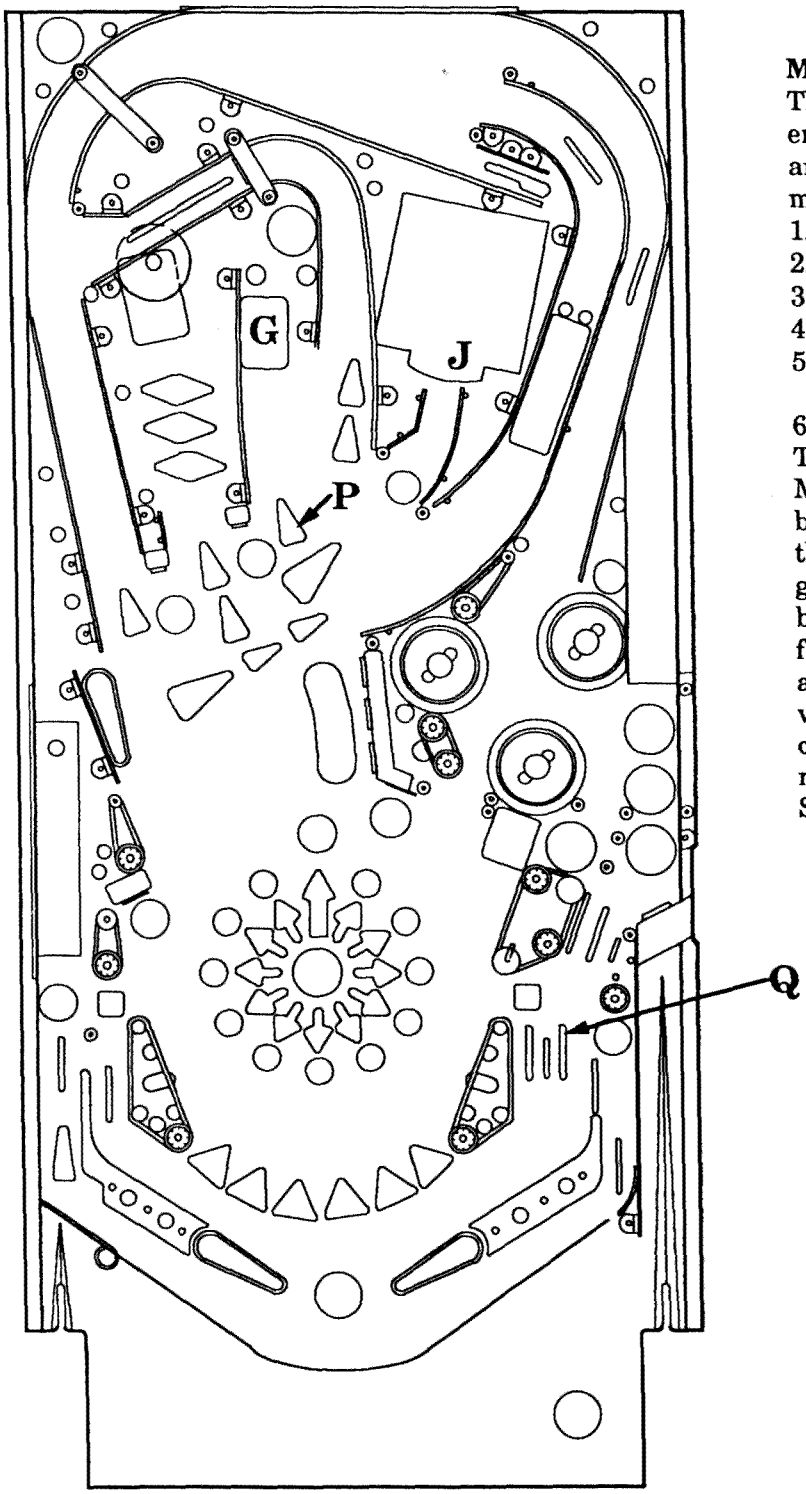
Right Side Plunger Skill Shot:
The right side plunger skill shot is made by carefully shooting the ball to drop behind the dummys head (K). This awards 250, 000 points for the first successfull attempt, 500, 000 points for the second, 750, 000 for the third etc.

FUNHOUSE
Left Side Plunger



Left Side Plunger Skill Shot:
The left side plunger shoots the ball up onto the Crazy Steps (L). The left plunger is accessed by one of two methods. The first method is dropping the ball into the Manhole at (M). Once the ball has gone into the Manhole, the diverter on the center ramp will open, so that a center ramp shot takes the ball to the left plunger for a shot on the crazy steps. The second method is lighting the GATE OPEN feature on the Mystery Mirror (next page). Once the gate is opened by this feature either a ramp shot OR a left side drain will send the ball to the left side plunger. The individual values on the crazy steps are lit by completing the S-T-E-P targets (F) on the main playfield. The crazy steps awards are as follows: The lowest step (yellow light), opens the trap door to begin Funhouse Frenzy (page 8) . The middle step (red light) lights the Extra Ball light at (N). The top step (green light) lights the Lock light at (H) for 500, 000 points. If the player pulls the plunger all the way back and the ball goes down the long flight of steps then the Superdog bonus is lit (page 9). Once a feature is started in this fashion its lamp on the steps goes out. These are all one ball features such that they must be made on the same ball as the steps shot was made on (no memory).

FUNHOUSE
Mystery Mirror

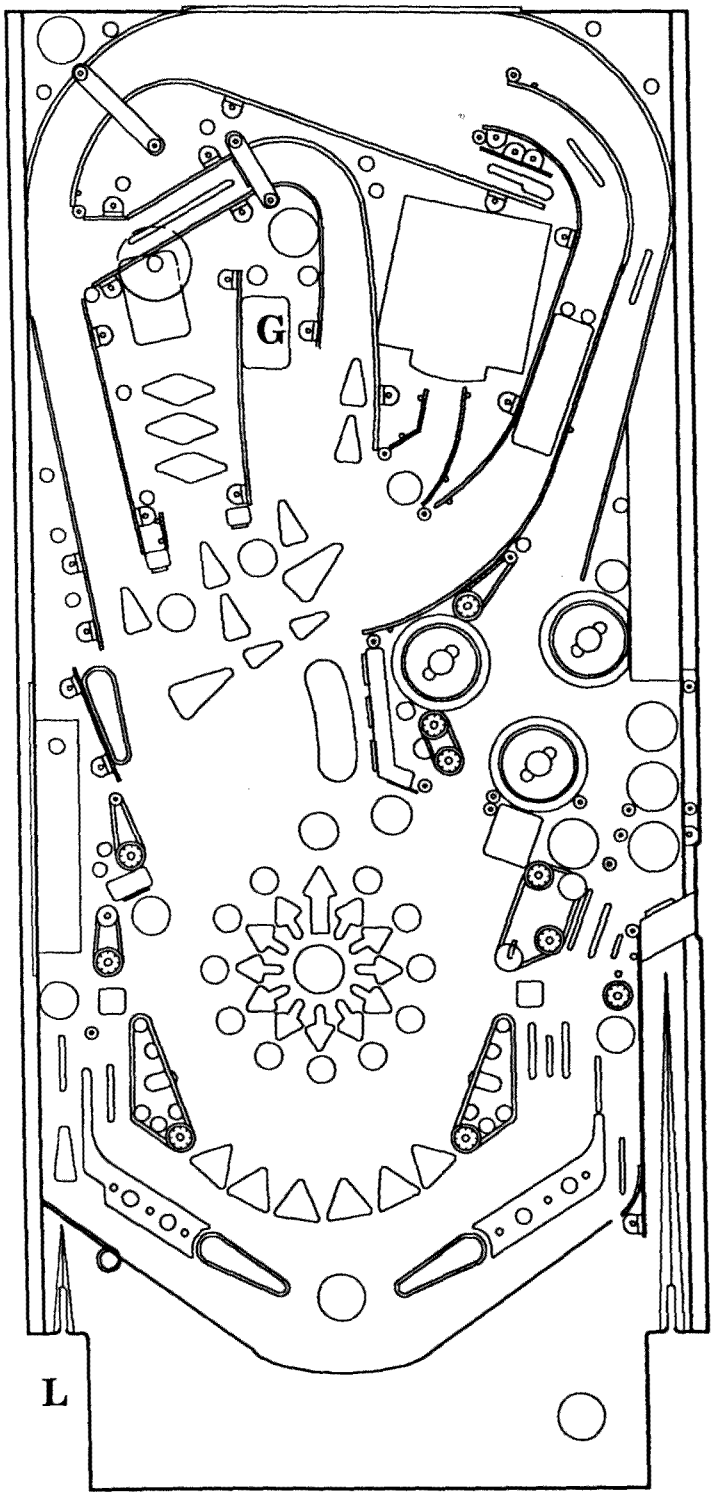


Mystery Mirror:
The Mystery Mirror is located over the entrance to the Wind Tunnel at (G). There are 6 values that can be awarded on the mirror. These include:

1. Light Extra Ball Shot
2. Light Million Shot
3. Start Quick Multi-ball
4. Start Superdog Bonus Timer
5. Light Jet Bumpers for Maximum Value
6. Open Left Side Plunger Gate

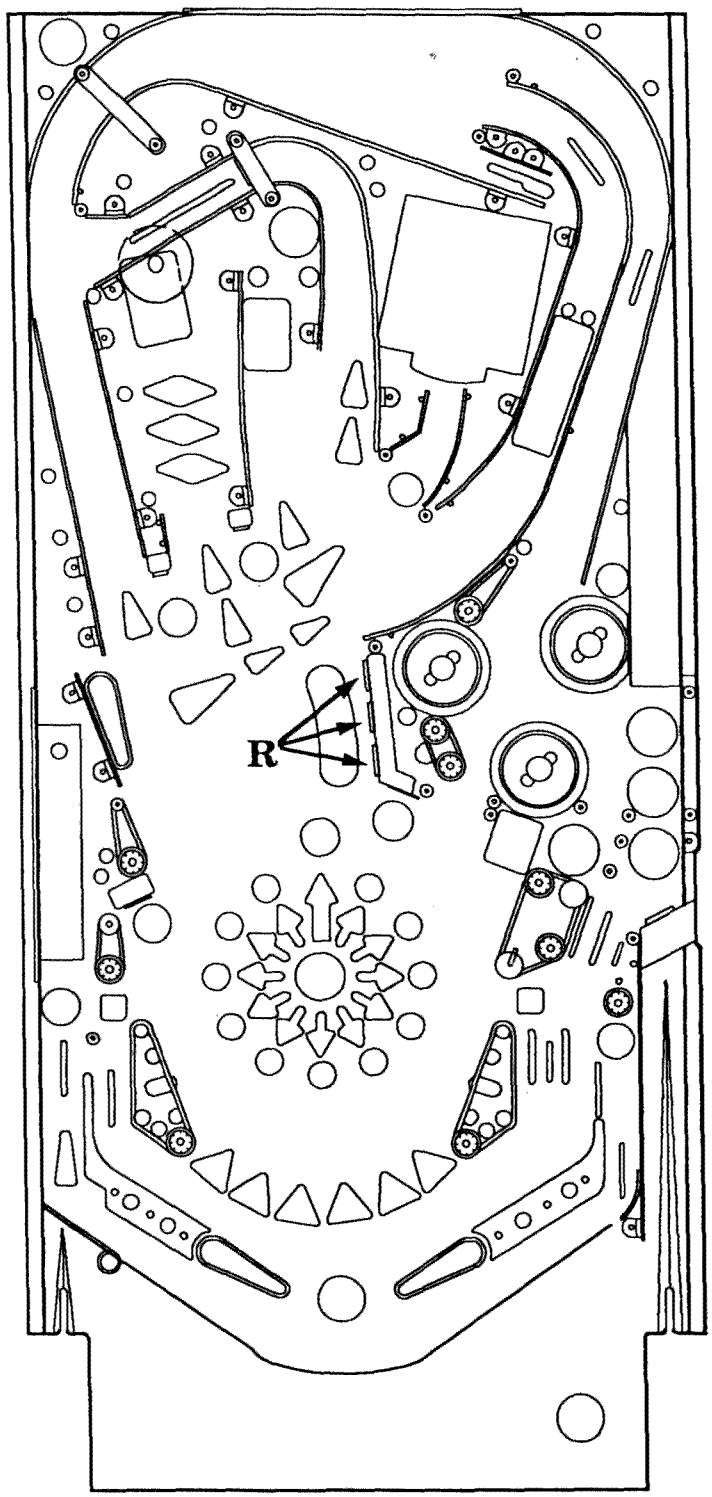
The blinking value that can be awarded is MOVED by the ball contacting the jet bumpers. The value is AWARDED when the lamp at (P) is lit. The LAMP is lit at game start. It is re-lit on a timer when the ball goes through the right outermost flipper return lane (Q). It is re-lit solidly on a hit to the dummys jaw (J). After all 6 values are awarded the lamp is lit so that on the next award the player receives 1 million points and the game starts SUPER-FUNHOUSE FRENZY.

FUNHOUSE
Funhouse Frenzy and Super Frenzy



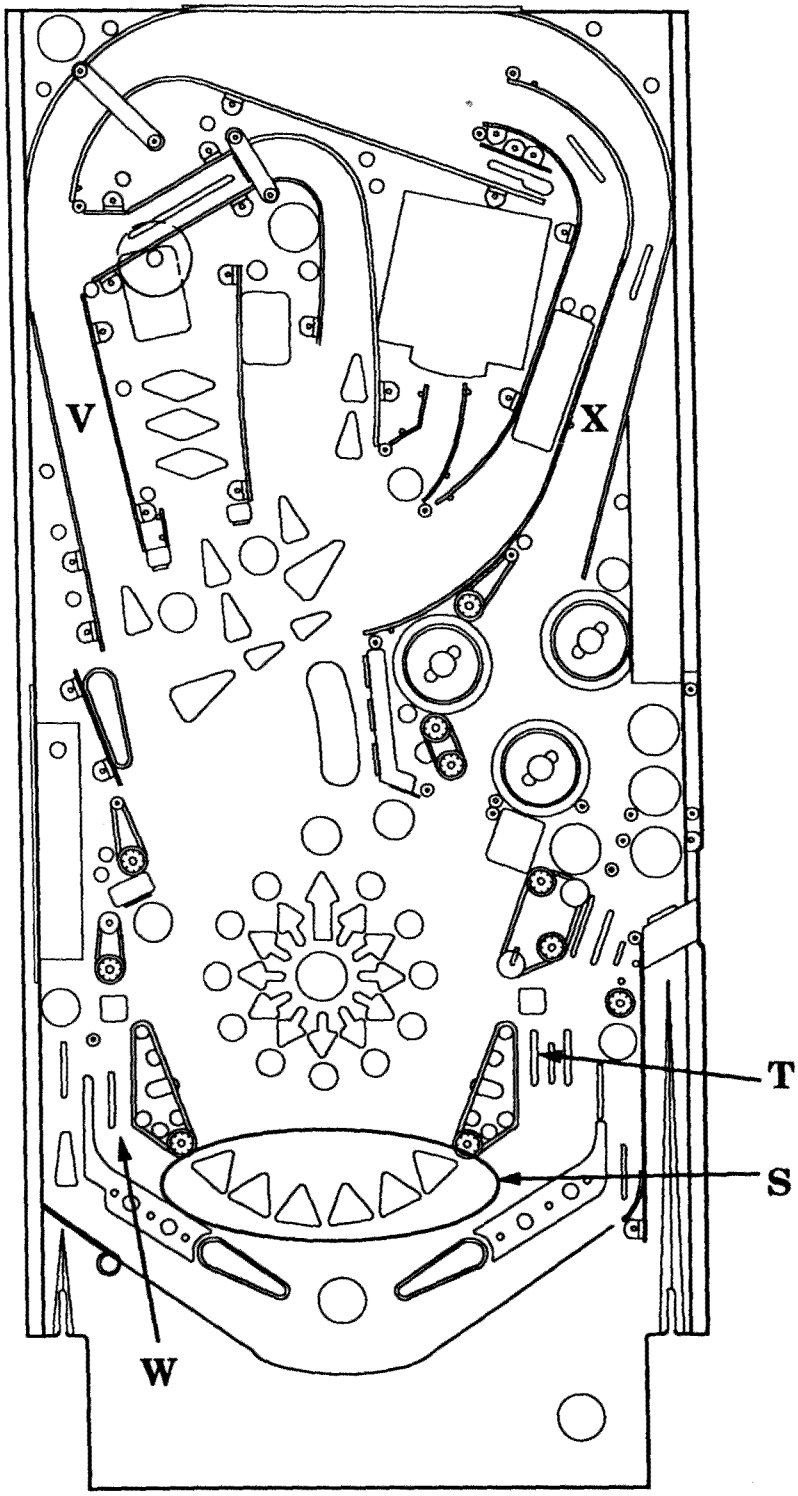
Funhouse Frenzy and Super Frenzy: When Frenzy or Super Frenzy mode is entered from either the Crazy Steps (L), or by completing all 6 features on the Mystery Mirror (G), the player enters a timed super scoring period. During this period any scoring switch made on the playfield is worth a much larger point value than normal. This value is added into the players score at the end of the ball.

FUNHOUSE
Superdog Bonus Timer



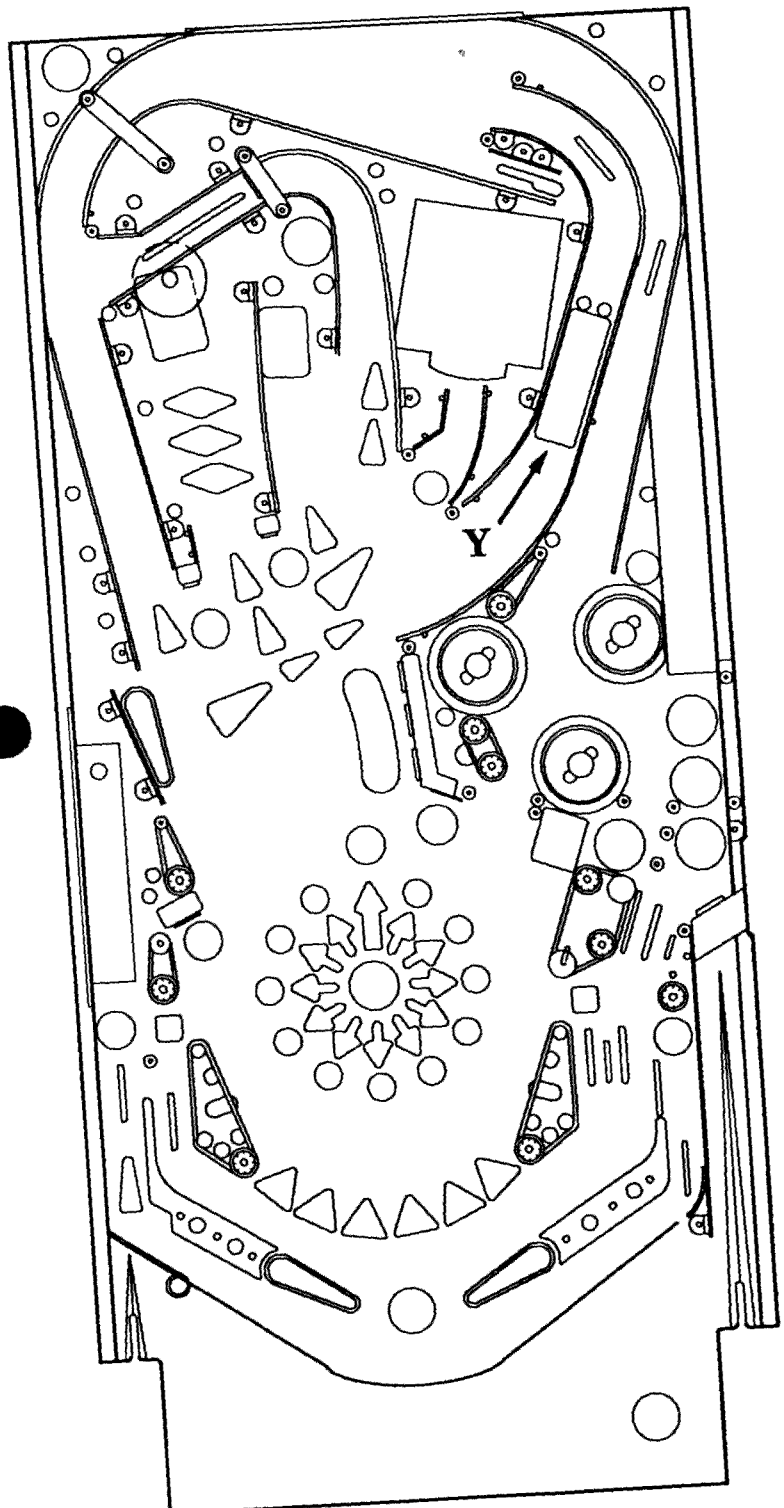
Superdog Bonus Timer:
Superdog Bonus Timer can be started from either the Crazy Steps or as a Mystery Mirror value. When in Superdog mode, the 3 Targets at (R) score 200, 000 points on each subsequent hit.

FUNHOUSE
Gangway Bonus



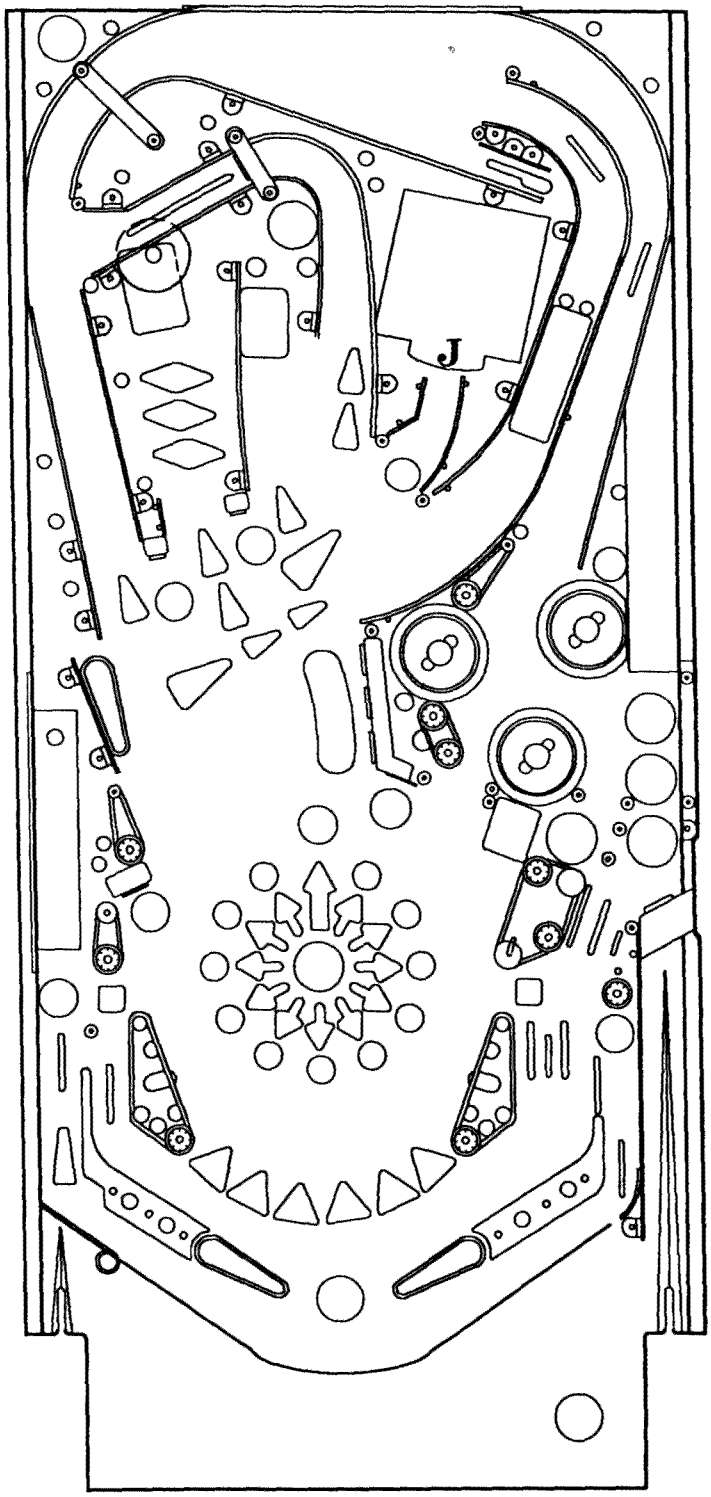
Gangway Bonus:
The current Gangway value is SHOWN in the lights at (S). The value is COLLECTED by the ball passing through the right inner flipper return lane (T) and then being shot up the Left Gangway (V). It can also be collected by the ball passing through the left flipper return lane (W) and then being shot up the Right Gangway (X). Every time the value is held from ball to ball until the player collects EXTRA BALL. Once an Extra Ball has been collected the value resets to the starting value at the start of all subsequent balls.

FUNHOUSE
Trap Door Bonus



Trap Door Bonus:
During normal game play the inner loop at (Y) can open the trap Door for a points bonus. The first time a loop is completed with the left side flipper the door will open and the player has a set interval of time to enter the door. The first time is worth 250, 000 points. The next time the player must complete 2 loops, then 3 loops etc.. The points awarded are 500, 000 for 2 loops, 750, 000 for 3 loops etc..

FUNHOUSE
Bonus



Bonus:
The Bonus is based on the number of hits to the dummys jaw (J). The Bonus is held from ball to ball and is a game long accumulation that is awarded at the end of each ball.

Section 1

Game Operation & Test Information

- **FUNHOUSE (System WPC) ROM Summary**
- **Pinball Game Assembly Instructions**
- **Game Play**
- **Menu System Operation**
  - **Adjustments**
  - **Audits**
  - **Test/Diagnostic Procedures**
  - **Utilities**

FUNHOUSE (System WPC) ROM Summary

IC	TYPE	LOCATION	BOARD	PART NUMBER
Game ROM 1	27010	U6	CPU	A-5343-50003-1
Music/Speech ROM 2	27010	U14	Audio	A-5343-50003-2
Music/Speech ROM 3	27010	U15	Audio	A-5343-50003-3
Music/Speech ROM 4	27010	U18	Audio	A-5343-50003-4

NOTICE

To order a replacement ROM from your authorized WILLIAMS ELECTRONICS GAMES distributor, specify: (1) part number (if available); (2) ROM label color; (3) ROM level (number) on the label; (4) which game the ROM is used in.

CONNECTOR & COMPONENT IDENTIFICATION

Since **FUNHOUSE** uses WILLIAMS ELECTRONICS GAMES' WPC Electronics System, a new technique to identify connectors and other game components must be introduced. Each plug or jack receives a prefix number (which identifies the circuit board), a letter, and a number. J-designations refer to the male part of a connector. P-designations refer to the female part of a connector. For example, J101 designates jack 1 of board 1 (a Power Driver Board Board jack); P306 designates plug 6 of board 3 (a Display Driver Board plug). Identifying the specific pin number of a connector involves a hyphen, which separates the pin number from the plug or jack designation. For example, J101-3 refers to pin 3 of jack 1 on board 1.

Other game components may also have similar prefixes preceding their designator to clarify their locations or related circuit. For example, F501 refers to a fuse located on the Sound Board.

Prefix numbers for the WPC circuit boards are listed below.

1- Power Driver Board
2- CPU Board
3- Display Driver Board
4- Dual or Single Display Board
5- Sound Board

CIRCUIT BOARDS

WPC Circuit Boards for **FUNHOUSE** are in the backbox. They are accessible by unlocking the Backbox lock, removing the Backbox glass, unlatching the Insert Board, and swinging it open.

The Display Driver Board is mounted on the interior side of the Speaker/Display Panel, below the Backbox glass in the Backbox. To access the Display Driver Board, unlock the Backbox, remove the Backbox glass, lift the Speaker/Display Panel, and lay it on the game cabinet.

Lamp circuit boards are mounted under the Playfield.

CPU BOARD The WPC CPU Board, p/n A-12742-50003, must be equipped with the ROM specified in the ROM Summary.

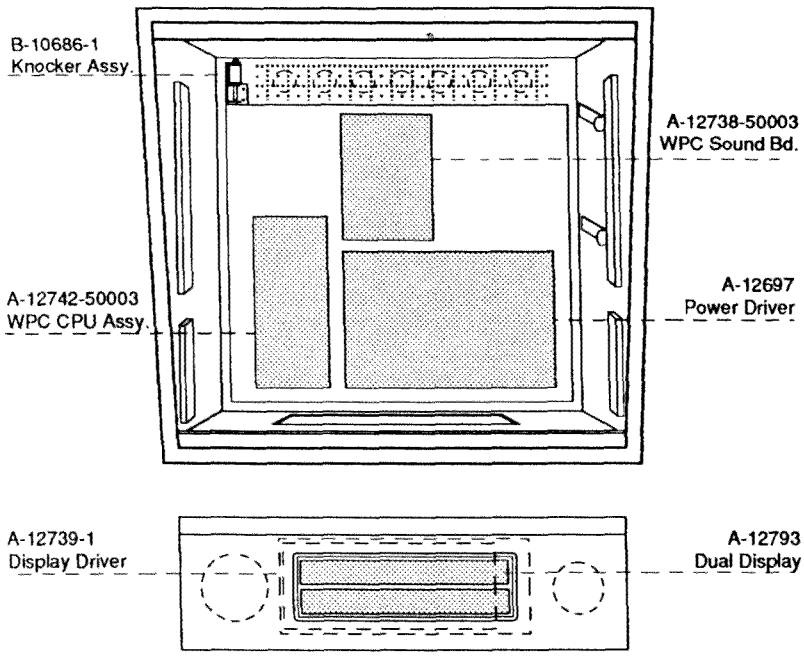
SOUND BOARD The Sound Board is p/n A-12738-50003, including ROMs and microprocessor.

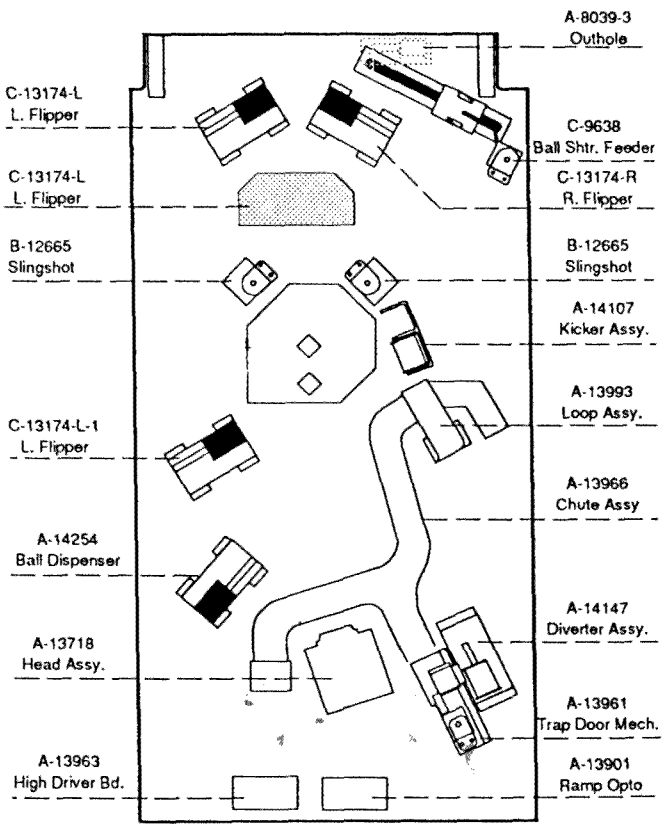
POWER DRIVER BOARD The Power Driver Board is p/n A-12697.

DISPLAY DRIVER BOARD The Display Driver Board is p/n A-12739-1, -2, or -3. The dash number indicates whether an extended display is used, and if so, how many. No extended display = -1, one extended display = -2, two extended displays = -3.

DUAL DISPLAY BOARD The Dual Display Board is p/n A-12793.

Figure 1 shows the locations of these circuit boards, as well as other devices especially located to make **FUNHOUSE** a great game.





Under Side of Playfield,
Viewed in Raised Position

Figure 1. Locations Diagram - Game Circuit Boards and Major Mechanisms

FUNHOUSE GAME CONTROL LOCATIONS

Cabinet Switches
The On-Off switch is on the bottom of the cabinet near the right front leg.
The Start Button is a pushbutton to the left of the coin door on the cabinet exterior. Press the Start button to begin a game, or during the diagnostic mode, to ask for HELP.

Coin Door Switches
The operator controls all game adjustments, obtain bookkeeping information, and diagnose problems, using only four pushbutton switches mounted on the inside of the coin door. The Coin Door Switches have two modes of operation Normal Function and Test Function.

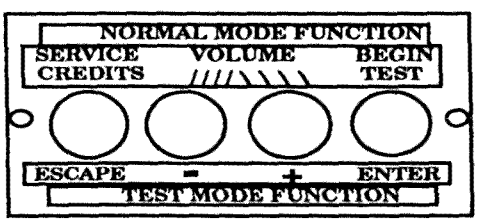
Normal Function

The Service Credits switch puts credits on the game that are not included in the game audits.
The Volume Up switch raises the sound level of the game. Press and hold the button until the desired level is reached.
The Volume Down switch lowers the sound level of the game. Press and hold the button until the desired level is reached.
The Begin Test switch starts the Menu System Operation and changes the Coin Door Switches from Normal Function to Test Function.

Test Function

The Escape switch allows you to get out of a menu selection or to return to the Attract Mode.
The Up switch allows you to cycle forword through the menu selections or adjustment choices.
The Down switch allows you to cycle backward through the menu selections or adjustment choices.
The Enter switch allows you to get into a menu selection or lock in an adjustment choice.

Coin Door Switches



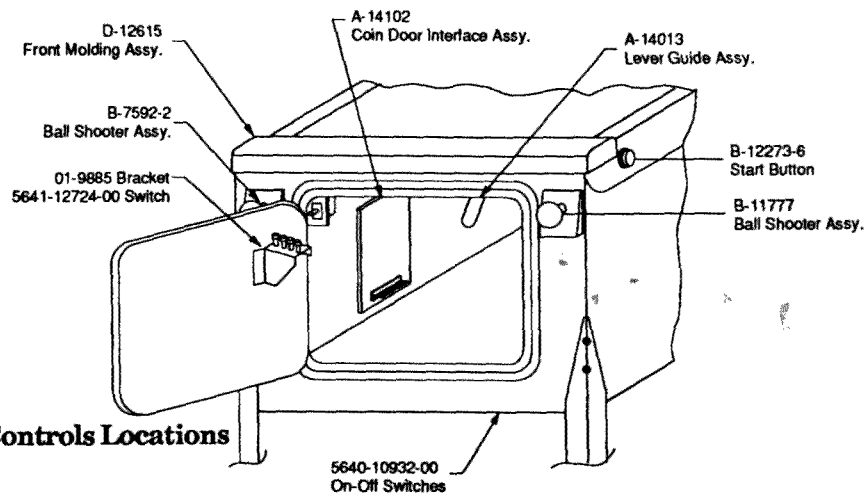


Figure 2. Pinball Game Controls Locations

PINBALL GAME ASSEMBLY INSTRUCTIONS

1. Open the shipping container; remove all cartons, parts, and other items, and set them aside.

2. Place the cabinet on a support and attach rear legs using leg bolts. Leg levellers and leg bolts are provided among the parts in the cash box.

3. Attach the front legs (after installing leg levellers), using leg bolts. See Figure 3 for details.

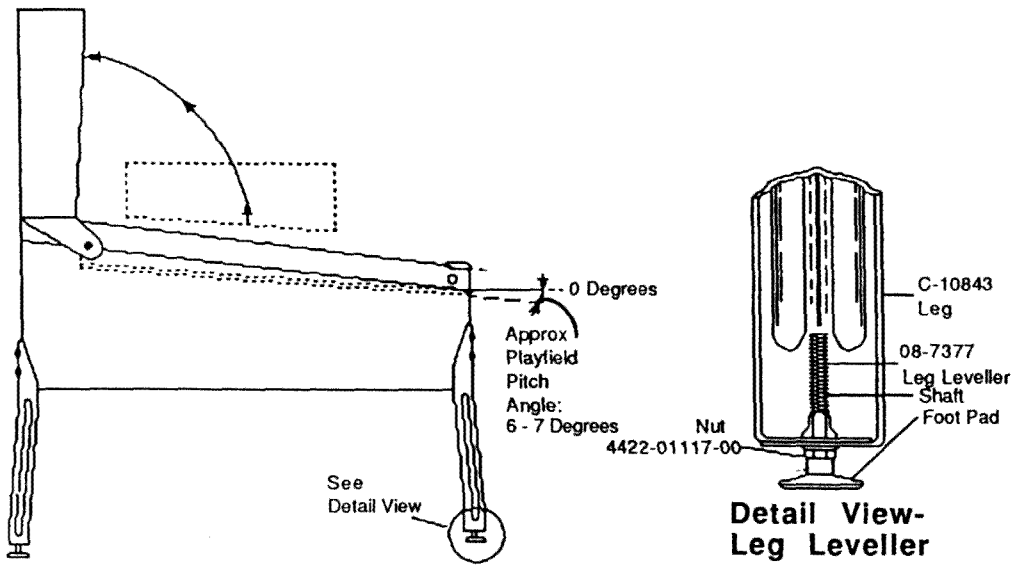


Figure 3. Pinball Assembly, Playfield Pitch Angle, and Leg Leveller Details.

4. Reach into the cabinet and backbox and ensure that the interconnecting cables are free to move (not kinked or pinched). Be careful to avoid damaging wires at any stage of the assembly process.

5. Raise the hinged backbox upright and latch it into position. Unlock the backbox, and remove the backbox glass, storing it carefully to avoid scratches. Remove the shipping block holding the Insert Board. Unlatch the Insert Board and open it; lift the Speaker/Display Panel and lay it on the playfield glass. This allows access to the bolt holes used for securing the backbox upright. Install the washer-head mounting bolts through the bottom holes of the backbox into the threaded fasteners in the cabinet to secure the backbox. Remount the Speaker/Display Panel; close the Insert Board and latch it in position. Reinstall the backbox glass, and lock the backbox.

FAILURE TO INSTALL the backbox mounting hardware properly can cause personal injury. ***NEVER TRANSPORT*** a pinball game with the hinged backbox erect. *Always* lower the backbox forward onto the playfield cabinet on a layer of protective material to prevent marring or damage and possible personal injury.

GAME OPERATION

After assembly and installation at its site location, this game must be plugged into a properly grounded outlet to prevent shock hazard, and to assure proper game operation. DO NOT use a 'cheater' plug to defeat the ground pin on the line cord. DO NOT cut off the ground pin.

POWERING UP. Perform the following 'power up' routine upon completion of the assembly and installation procedure, as well as at the beginning of each period of game operation. Initially, it will confirm that the game is in proper operating condition; later, it will aid the operator via its messages (refer to later text entitled "Problem Analysis Messages").

Procedure. With the coin door closed, plug the game in, and switch it ON, using the On-Off switch. In normal operation, the top score display initially shows the last score. Then, the game goes into the Attract Mode (playfield and backbox lamps flashing, sounds being heard, etc., if the operator does not change the Factory Setting).

Open the coin door and press the BEGIN TEST switch to begin the game test routine. The top score diplay shows the game name, and the bottom score display shows the game number and game software revision. The message changes. The top score display shows the sound software revision, and the bottom score display shows the revision level of the system software and the date the game software was revised.

FUNHOUSE	**Sound Rev. L-1**
50003 Rev. P-6	**SY. 0.90 11-5-90**

Perform the entire test menu routine to verify that the game is operating satisfactorily (refer to later text entitled "Menu System Operation"). Successful completion of the tests shows that the game is ready to begin earning your investment return.

After the game has been on location for a period of time, the test routine may be preceded by messages concerning game problems. The text entitled 'Problem Analysis Messages' contains more details concerning messages displayed at each game turn-on.

ATTRACT MODE*. Playfield and backbox lamps blink. The player score displays exhibit a series of messages informing the player concerning:

A. Recent highest scores*;
B. A "custom message"
("**PLAY FUNHOUSE**")*;
C. The score to achieve to obtain a Replay award*;

These (or similar) displays reappear occasionally, accompanied by sounds and music, until a player initiates game play by inserting a coin or, when credits are available, pressing the Start button.

* - operator-adjustable feature

CREDIT POSTING. Insert coin(s). A sound is heard for each coin, and the player score displays show the number of credits purchased. So long as the number of maximum allowable credits* are *NOT* exceeded by coin purchase or high score, credits are posted correctly.

STARTING A GAME. Press the Start button once. A startup sound plays, and the Credit amount shown in the player score display decreases by one. The upper Player Score Display flashes 00 (until the first playfield switch is actuated), and the lower Player Score Display shows ball 1, except for 4-player games where the ball # shows in the individual player's display. Additional players may enter the game by pressing the Start button once for each player, before the end of play on the first ball.

TILTS. Actuating the Slam Tilt switch on the coin door inside the cabinet ends the current game; **FUNHOUSE** then proceeds to the Game Over Mode. With the third closure* of the plumb bob tilt switch, the player loses the remaining play of that ball, but can complete the game.

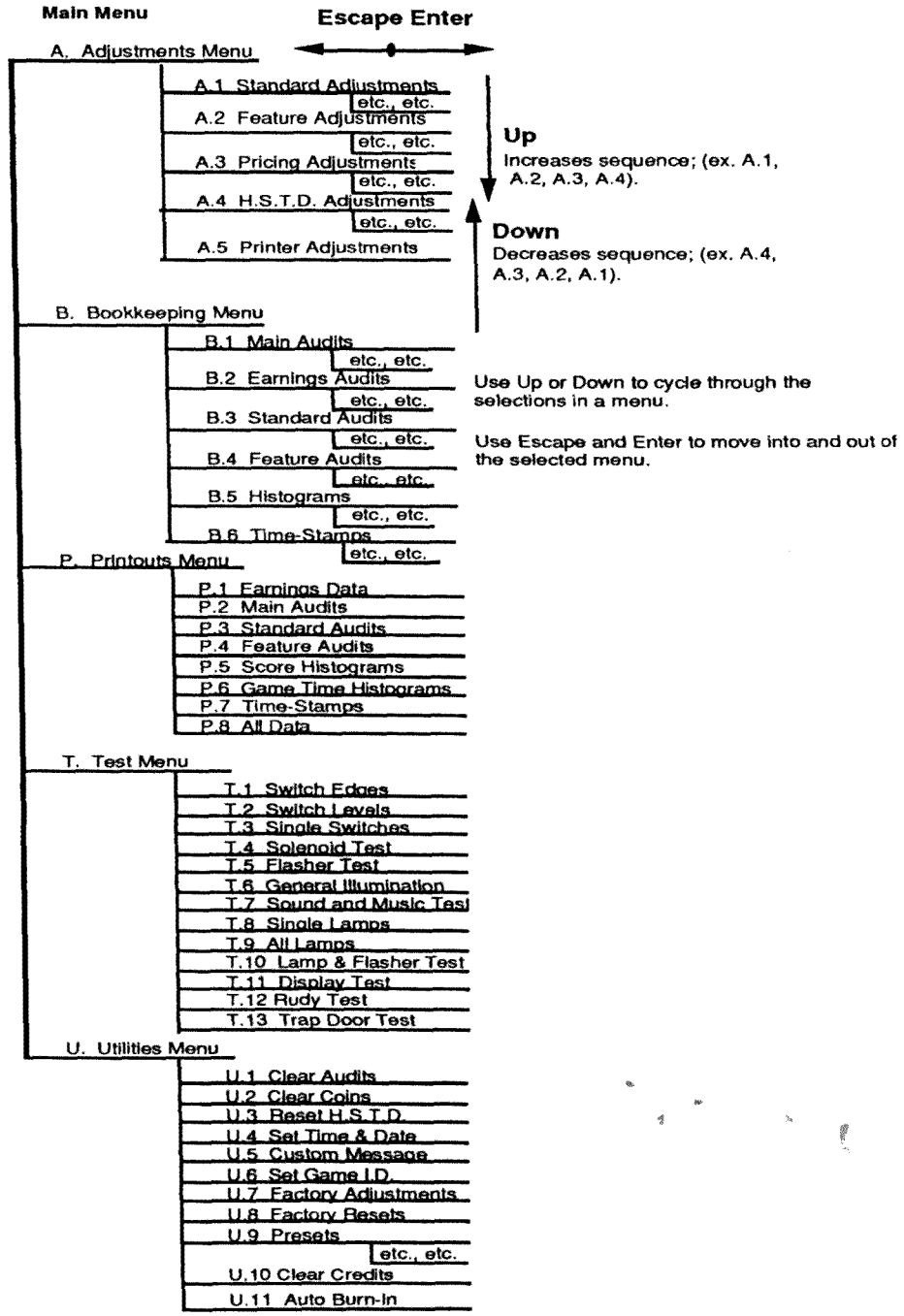
END OF GAME. All earned scores and bonuses are awarded. If a player's final score exceeds the specified value, the player receives a designated award for achieving the current highest score. A random digit set* appears in the Match display. Credit* may be awarded, when the last two digits of any player's score display (1 through 4) match the random digits of the Match display. Match, high score, and game over sounds are made, as appropriate.

GAME OVER MODE. The GAME OVER display shows in the player score displays. Then, the high scores flash on the appropriate player score displays. The game proceeds to the Attract Mode.

* - operator-adjustable feature

MENU SYSTEM OPERATION

FUNHOUSE operates on a Menu System. The Main Menu allows you to choose from several main categories, which in turn lead to other menus to choose from. To enter the Menu System, open the coin door and press the Begin Test button. The displays show the Game I.D. Mode. Press the Enter button and the Main Menu appears. To cycle through the Main Menu selections press either the Up or Down button. Activate any selection by pressing the Enter button when the desired selection appears in the displays. To return to the Attract Mode while viewing the Main Menu, or to return to a previous menu selection, press the Escape button. Press the Start button for HELP at any time.



MAIN MENU

A. Adjustments
B. Bookkeeping
P. Printouts (optional board required)
T. Tests
U. Utilities

The game Adjustments are the first category available from the Main Menu. Press the Enter button to activate the Adjustments Menu. Press the Up or Down button to cycle through the Adjustment Menu selections. Press the Enter button to activate the desired Adjustment Group when that group appears in the displays.

A. ADJUSTMENTS MENU

A.1 Standard Adjustments
A.2 Feature Adjustments
A.3 Pricing Adjustments
A.4 H.S.T.D Adjustments
A.5 Printer Adjustments (optional board required)

Once you have entered the adjustment group desired, press the Up or Down button to cycle through the available adjustments in that group. When the desired adjustment appears press the Enter button to activate that adjustment. When an adjustment is activated, the setting value begins to flash. Use the Up or Down button to raise or lower the setting value. When the desired value is displayed press Enter to lock in the value. IF you realize you have made an error, press the Escape button while "Saving Adjustment Value" is displayed. The new value is ignored and the original value is retained.

A.1 Standard Adjustments

A.1 01 Balls Per Game
The operator defines a "game" by specifing the number of balls to be played. The range of this setting is 1 through 10.

A.1 02 Tilt Warnings
The operator specifies the number of total actuations of the plumb bob mechanism that can occur before the game is "tilted". The range of this setting is 1 through 10.

A.1 03 Maximum Extra Balls
The operator chooses the number of Extra Balls that a player may accumulate. The range of this setting is 1 through 10 , or "No Extra Ball" (extra ball disabled).

A.1 04 Maximum Extra Balls/Ball in Play
The operator chooses the number of Extra Balls to be awarded per ball in play. The range of this setting is:

OFF - No maximum number of Extra Ball per ball in play.
1-10 - 1 through 10 Extra Balls per ball in play.

A.1 05 **Replay System**
The operator chooses the replay system to be used. The choices are:

Fixed - Replay value is set by the operator and does not change during game play.
Auto% - Replay starting value is set by the operator and changes every 50 games to comply with the percentage of replays desired.

A.1 06 **Replay Percent***
The operator chooses the percentage of replays the players are able to earn when Auto Replay is used. The range of this setting is 5% to 50%.

A.1 07 **Replay Start***
The operator chooses the replay starting value when Auto%Replay is used. The range of this setting is 1, 000, 000 to 15, 000, 000.

A.1 08 **Replay Levels***
The operator chooses the number of replay levels used by the Auto% Replay mode. The range of this setting is 1 through 4. When the operator chooses two replay levels, the second replay level is automatically adjusted to twice the starting replay level value. When three of four replay levels are chosen, their values are automatically adjusted to three or four times the starting replay level value.

A.1 09 **Replay Level 1****
The operator chooses the value to be used for the first Fixed Replay. The range of this setting is 00 to 25, 000, 000.

A.1 10 **Replay Level 2****
The operator chooses the value to be used for the second Fixed Replay. The range of this setting is 00 to 25, 000, 000.

A.1 11 **Replay Level 3****
The operator chooses the value to be used for the third Fixed Replay. The range of this setting is 00 to 25, 000, 000.

A.1 12 **Replay Level 4****
The operator chooses the value to be used for the fourth Fixed Replay. The range of this setting is 00 to 25, 000, 000.

A.1 13 **Replay Boost**
The operator chooses if the replay score can be temporarily boosted by the selected amount EACH time the player reaches or exceeds the replay score. This temporary boost is cancelled when Credits=0, when the player inserts another coin, or when Begin Test is pressed. The choices are:

ON - Score is boosted between 500, 000 and 5, 000, 000 points.
OFF - The replay score is not boosted.

*For Auto % Replay. ** For Fixed Replay

A.1 14 **Replay Award**

For either Auto% Replay or Fixed Replay the operator can choose the form of the award automatically provided when the player exceeds any replay level. The choices are:

Credit - Reaching each Replay level awards credit.
Ticket - Reaching each Replay level awards a ticket.
Ball - Reaching each Replay level awards an Extra Ball.
Audit - Reaching each Replay level awards nothing to the player; it does increase the entry value of the Audit Item(s) maintaining a tally of these awards.

A.1 15 **Special Award**

The operator can choose the award automatically provided when the player scores a special. The choices are:

Credit - Scoring a Special awards a Credit.
Ticket - Scoring a Special awards a Ticket.
Ball - Scoring a Special awards an Extra Ball.
Points - Scoring a Special awards 1 Million points.

A.1 16 **Match Award**

The operator can choose the award automatically provided when the players wins a match. The choices are:

Credit - Winning a Match awards a Credit.
Ticket - Winning a Match awards a Ticket.

A.1 17 **Extra Ball Ticket**

The operator can choose whether a Ticket is awarded when the player earns an Extra Ball. The choices are:

YES - The player is awarded a Ticket in addition to an Extra Ball.
NO - The player is not awarded a Ticket.

A.1 18 **Maximum Ticket/Player**

The operator can choose the amount of Tickets each player can earn. The range of this setting is 00 to 100.

A.1 19 **Match Feature**

The operator can choose the desired percentage for the Match Feature occuring at the end of the game. The range of this setting is:

OFF - Match Feature is not available.
1-50% - 1% is 'hard'; 50% is 'extremely easy'. During the Match Feature the game selects a random two-digit number at the end of the game and compares each players score for an identical two digits in the rightmost two positions. A matching of these two digits results in award of a Credit or a Ticket.

A.1 20 **Custom Message**
The operator chooses if a message is displayed during the Attract Mode. The choices are:

YES - A message is displayed
NO - A message is not displayed.

A.1 21 **Language**
The operator chooses what language the game uses. The choices are, English, French, or German.

A.1 22 **Clock Style**
The operator chooses what style of clock the game uses. The choices are A.M./P.M. or 24 Hours.

A.1 23 **Date Style**
The operator chooses what style of date the game uses. The choices are Month/Date/Year, or Date/Month/Year.

A.1 24 **Show Date and Time**
The operator chooses whether the date and time show in the Attract Mode. The choices are:

YES - Show the date, time in status report or in the Attract Mode.
NO - Do Not show date, time in status report or in the Attract Mode.

A.1 25 **Allow Dim Illumination**
The operator chooses whether to allow the game program to dim the General Illumination for special effects and during the Attract Mode. The choices are:

YES - Dim the General Illumination during the Attract Mode.
NO - Do Not dim the General Illumination.

A.1 26 **Tournament Play**
The operator chooses whether to equalize Multi-ball and Jackpots during multi-player games, (do not carry over to next player). The choices are:

YES - Keep Multi-ball and Jackpots equal.
NO - Do Not Keep Multi-ball and Jackpots equal.

A.1 27 **Euro. Scr. Format**
The operator chooses whether to have commas or dots between digits when numbers are displayed. The choices are:

YES - Dots instead of commas, (example- 1.000.000).
NO - Commas instead of dots, (example- 1, 000, 000).

A.1 28 **Minimum Volume Control**
The operator chooses whether the volume can be turned Off. The choices are:

YES - Volume can be turned Off.
NO - Volume can be turned Down but not Off.

Press the Escape button to return to the Adjustments Menu. Press the Up button to advance to the next desired Adjustments Group, (or press the Down button to return to a previous group). Press the Enter button to activate. Use the Up or Down button to cycle through the available adjustments.

A.2 Feature Adjustments

A.2 01 1st Round Start

The operator selects the time put on the clock at the start of the game, for the 1st Multi-ball sequence. The range of this setting is 3 o' clock through 10 o' clock.

A.2 02 Subsequent Start

The operator selects the time put on the clock for each subsequent Multi-ball sequence. The range of this setting is, 3 o' clock through 10 o' clock.

A.2 03 Hallway Timer

The operator determines the amount of time a player has to achieve the "Hidden Hallway" after Multi-ball has ended. The choices are, Long or Short.

A.2 04 Gangway Timer

The operator determines the length of time the Gangway Lamps blink after the corresponding flipper lanes are hit. The choices are Long or Short.

A.2 05 Gangway Start

The operator chooses the Gangway Lamp that blinks (next one awarded) at the start of a game. The range of this setting is the 75, 000 through 250, 000 Lamp.

A.2 06 Gangway Memory

The operator chooses whether the Gangway value is carried over from ball to ball or reset at ball start. Note, once the Extra Ball is lit from the Gangway feature, the Gangway resets to 75, 000 for each subsequent ball. The choices are:

YES - The Gangway value is carried over from ball to ball.
NO - The Gangway value is reset at the start of each ball.

A.2 07 Gangway Extra Ball Memory

The operator chooses whether the Extra Ball Lamp, when lit from the Gangway feature, is carried over from ball to ball or is reset at ball start. The choices are:

YES - The Extra Ball Lamp is carried over from ball to ball.
NO - The Extra Ball Lamp is reset at the start of each ball.

A.2 08 Mirror Extra Ball Memory

The operator chooses whether the Extra Ball Lamp, when lit by the Mystery Mirror, is carried over from ball to ball or reset at the start of each ball. The choices are:

YES - The Extra Ball Lamp is carried over from ball to ball.
NO - The Extra Ball Lamp is reset at the start of each ball.

A.2 09 Steps Extra Ball Memory

The operator chooses whether the Extra Ball Lamp, when lit from the Steps Feature, is carried over from ball to ball or is reset at ball start. The choices are:

YES - The Extra Ball Lamp is carried over from ball to ball.
NO - The Extra Ball Lamp is reset at the start of each ball.

A.2 18 **Disable Trap Door**
The operator chooses whether to stop the opening and closing of the Trap Door. The Loop switch provides Trap Door awards when this is set to Yes.

YES - Stop the Trap Door from opening and closing.
NO - Do not stop the Trap Door from opening and closing.

A.2 19 **Disable Steps Gate**
The operator chooses whether the Steps Gate is disabled and the Steps feature not allowed. Should the gate break, balls diverted to the Steps go down the left drain, and a free ball is granted. By setting this feature to Yes, the feature is bypassed thus eliminating free balls. The choices are:

YES - Disable the Steps Gate.
NO - Do not disable the Steps Gate.

Press the Up button to advance to the next desired Adjustment Group, (or press the Down button to return to a previous Adjustment Group). Press the Enter button to activate that group. Press the Up or Down button to cycle through the available adjustments in that group.

A. 3 Pricing Adjustments

A.3 01 **Game Pricing (if set to custom, then 02 to 09 are available)**
The operator chooses the cost for a game from a selection of Standard pricing or by installing Custom pricing.

A.3 02 **Left Coin Units**
The operator can specify the number of coin units purchased by a coin passing through the left coin chute.

A.3 03 **Center Coin Units**
The operator can specify the number of coin units purchased by a coin passing through the center coin chute.

A.3 04 **Right Coin Units**
The operator can specify the number of coin units purchased by a coin passing through the right coin chute.

A.3 05 **4th Slot Units**
The operator can specify the number of coin units purchased by a coin passing through the fourth coin chute.

A.3 06 **Units/Credits**
The operator can define the number of coin units required to obtain 1 credit. A coin unit counter in the game program totals the number of coin units purchased through all coin chutes prior to each game. If the total number of these coin units exceeds or matches the Unit per Credit value by a multiple (or more, coin units) of the specified Units per Credit value the Credits display shows the proper number of credits. The coin unit counter retains any remaining coin units, until the start of Ball 2; then the coin unit counter is cleared (its contents are zeroed).

A.3 07 Units/Bonus
The operator can specify that additional credits are to be indicated in the credits display, when a certain number of coin units are accumulated.

A.3 08 Bonus Credits
The operator specifies the number of credits that are awarded when the Units/Bonus level is achieved.

A.3 09 Minimum Units
The operator can specify that No credits are to be posted (indicated in the credit display), until the credits unit counter reaches a particular value, by setting this value to 02 (or more).

A.3 10 Coin Door Type (if set to custom, then 11 to 15 are available)
This adjustment is used to pre-set adjustments 11 to 15 based on standard coin doors (U.S.A., German, etc.).

A.3 11 Collection Text
The operator chooses what coin system is used to display the Earning Audits.

A.3 12 Left Slot Value
The operator can specify the monetary value of the left coin chute.

A.3 13 Center Slot Value
The operator can specify the monetary value of the center coin chute.

A.3 14 Right Slot Value
The operator can specify the monetary value of the right coin chute.

A.3 15 4th Slot Value
The operator can specify the monetary value of the 4th coin chute.

A.3 16 Maximum Credits
The operator can specify the maximum number of credits the game can accumulate, either through game play awards or coin purchases. The range of this setting is 5 through 10. Reaching the specified setting prevents the award of any credits.

A.3 17 Free Play
The operator can specify whether a player can operate the game without a coin (free play) or with a coin. The choices are:

NO - A coin is necessary for game play.
YES - Game play is free; no coin required.

A.3 18 Hide Coin Audits
The operator chooses whether or not to show the coin audits. The choices are:

YES - The coin audits are not displayed.
NO - The coin audits are displayed.
HIDE NAMES - The coin audit value is shown but not the audit name.

A.3 19 1 Coin Buy-in

If the game pricing is set to1 for 50¢/2 for $1.00 the operator chooses whether the player is allowed to 'buy-in' a subsequent game for 1 coin. The number of games that may be purchased at this cost is determined by the number of players in the previous game; that is, if the previous game had three players, 3 Credits can be purchased at the rate of 1 coin per credit. The choices are:

YES - The player has 10 seconds to buy-in at 1 coin per game.
NO - The buy-in feature is disabled.

FUNHOUSE Pricing Table

Country	Coin Chute Left	Center	Right	Games/Coin	Display	Pricing Adjustments A.3 02	03	04	05	06	07	08	09
USA and Canada	25¢	-	25¢	1/25¢, 4/$1 [2]	U.S.A. 1	01	04	01	00	01	00	01	00
				1/50¢, 2/75¢, 3/$1 [1,2]	U.S.A. 2	03	12	03	00	04	00	01	00
				1/50¢, 2/$1 [2]	U.S.A. 3	01	04	01	00	02	00	01	01
				1/25¢, 3/$1 [2]	U.S.A. 4	01	00	01	00	02	04	01	01
				1/25¢, 3/50¢, 6/$1	CUSTOM	01	04	01	00	01	02	01	00
				1/25¢, 5/$	CUSTOM	01	00	01	00	01	04	01	00
				1/50¢ ; Add'l game: 25¢	CUSTOM	98	00	98	00	99	00	01	00
Austria	5 Sch	10 Sch	10 Sch	1/2x5 Sch, 3/2x10 Sch [2]	AUSTRIA	01	02	02	00	02	04	01	01
	5 Sch	-	10 Sch	2/5 Sch, 5/10 Schilling	CUSTOM	02	00	05	00	01	00	01	00
	1 Sch	5 Sch	10 Sch	2/5x1 Sch, 2/5 Sch, 5/10 Sch	CUSTOM	02	10	25	00	05	00	01	00
Australia	20¢	-	$1	1/3x20¢, 2/$1 [2]	AUSTRAL.	02	00	10	00	05	00	01	00
United Kingdom	10 P	50 P	1£	1/2x10 P, 3/50 P, 7/1£ [2]	U.K	03	15	30	00	05	30	01	00
	10 P	50 P	20P	1/10 P, 5/50 P, 2/20 Pence	CUSTOM	01	05	02	00	01	00	01	00
Switzerland	1 Fr	2 Fr	5 Fr	1/1 Fr, 3/2 Fr, 7/5 Franc [2]	SWISS	01	03	07	00	01	00	01	00
	1 Fr	-	2 Fr	1/1 Fr, 3/2 Fr	CUSTOM	03	00	06	00	02	00	01	00
Belgiun	20 Fr	20 Fr	20 Fr	3/20 Franc [2]	BELGIUM	03	03	03	00	01	00	01	00
	5 Fr	-	20 Fr	1/2x5 F, 2/20 Franc	CUSTOM	01	00	04	00	02	00	01	01
	5 Fr	20Fr	20 Fr	1/2x5 F, 2/20 F, 2/20 F	CUSTOM	01	04	04	00	02	00	01	01
	5 Fr	5Fr	20 Fr	1/2X5 F, 1/2X5 F, 2/20 F	CUSTOM	01	01	04	00	02	00	01	01
West German	1 DM	2 DM	5 DM	1/1 DM, 2/2 DM, 7/5 DMark [2,3]	GERMAN 1	06	12	30	00	05	30	01	00
				1/1 DM, 2/2 DM, 6/5 DM [1,2]	GERMAN 2	06	12	30	00	05	00	01	00
				1/1 DM, 3/2 DM, 9/5 DM	CUSTOM	09	18	45	00	05	00	01	00
				1/2x1 DM, 1/2 DM, 3/5 DM	CUSTOM	03	06	15	00	05	00	01	00
				2/1 DM, 5/2 DM, 14/5 DM	CUSTOM	13	26	65	00	05	65	01	00
Netherlands	1 HFl	2.5 HFl	2.5 HFl	1/1 HFl, 3/2.5 Holland Florin [2]	NETHERL.	06	15	15	00	05	00	01	00
	25¢	-	1G	1/25¢, 5/1 Guilder	CUSTOM	01	00	05	00	01	00	01	00
	1G	-	1G	1/1 Guilder [2]	HOLLAND	01	00	01	00	01	00	01	00
Sweden	5 Kr	5 Kr	5 Kr	1/5 Krona [2]	SWEDEN	01	01	01	00	01	00	01	00
	1 Kr	-	1 Kr	1/2x1 Krona	CUSTOM	01	04	01	00	02	00	01	01
France	1 Fr	5 Fr	10 Fr	1/3x1 F, 2/5 F, 5/10 Franc [1,2]	FRANCE	02	10	20	20	05	20	01	00
	1 Fr	5 Fr	10 Fr	1/2x1 F, 3/5 F, 7/10 Franc	CUSTOM	03	15	30	30	05	30	01	00
	5 Fr	10 Fr	10 Fr	1/5 F, 3/10 F, 7/2x10 Franc	CUSTOM	03	15	30	30	10	60	01	15
	5 Fr	10 Fr	10 Fr	2/5 F, 4/10 F, 9/2x10 Franc	CUSTOM	02	10	20	20	05	40	01	10
	5 Fr	10 Fr	10 Fr	2/5 F, 5/10 F, 11/2x10 Franc	CUSTOM	01	05	10	10	02	20	01	05
Italy	500L	500L	500L	1/500 Lire [2]	ITALY	01	01	01	00	01	00	01	00
Spain	25 P	-	100 P	1/25 P, 5/100 Peseta [2]	SPAIN	05	00	20	00	04	00	01	00
	25 P	-	100 P	1/25 P, 4/100 Peseta	CUSTOM	01	00	04	00	01	00	01	00
	25 P	-	100 P	1/2x25 P, 2/100 Peseta	CUSTOM	01	00	04	00	02	00	01	00
	25 P	-	100 P	1/2x25 P, 3/100 Peseta	CUSTOM	03	00	12	00	04	00	01	06
Japan	100 ¥	-	100 ¥	1/100 Yen [2]	JAPAN	01	00	01	00	01	00	01	00
Antilles, Nthrlnd	25¢	-	1G	1/25¢, 4/1 Guilder [2]	ANTILLES	01	01	04	00	01	00	01	00
Chile	Token	-	Token	1/1 Token [2]	CHILE	01	04	01	00	01	00	01	00
Denmark	1 Kr	5 Kr	10 Kr	1/2x1 Kr, 3/5 Kr, 7/10 Krone [2]	DENMARK	03	15	30	00	05	30	01	00
Finland	1 Mka	-	5 Mka	1/2x1 Mka, 3/5 Markka [2]	FINLAND	03	00	15	00	05	00	01	00
New Zealand	20¢	-	20¢	1/3x20¢ [2]	N. Z.	01	00	01	00	03	00	01	01
Norway 1	1 Kr	-	1 Kr	1/2x1 Kr, 3/5x1 Krone [2]	NORWAY 1	01	00	01	00	02	05	01	00
	15Kr	-	10 Kr	1/5 Kr, 2/10 Kr, 5/20 Krone	NORWAY 2	01	00	02	00	01	05	01	00
Argentina	10¢	10¢	10¢	1/1 Token [2]	ARG.	01	01	01	00	01	00	01	00
Greece	10 D	20 D	50 D	1/2x10D, 1/20D, 3/50 Drachma [2]	GREECE	03	06	15	00	05	00	01	00
Hungary	10 F		20 F	1/1x20F, 1/2x10F, 3/2x20 Forint	HUNGARY	01	00	02	00	02	04	01	00

Notes: 1. Factory Default. 2. Standard Setting - Change by pressing Enter button. 3. Other functions are also affected.

Press the Escape button to return to the Adjustment Menu. Press the Up button to advance to the next desired Adjustment Group, (or press the Down button to return to a previous Adjustment Group). Press the Enter button to activate that group. Press the Up or Down button to cycle through the available adjustments in that group.

A.4 H.S.T.D. Adjustments

A.4 01 Highest Scores
The operator specifies whether the game is to maintain a record of the four highest scores achieved to date. The choices are:

OFF - No high scores are recorded, or displayed.
ON - The four highest scores are stored in memory and displayed in the Attract Mode.

A.4 02 H.S.T.D. Award
The operator chooses the award given for achieving the High Score To Date, or the Champion H.S.T.D.. The choices are a Credit or a Ticket.

A.4 03 Champion H.S.T.D.
The operator chooses whether the "Highest" High Score is displayed in the Attract Mode. This score is not cleared when "High Score Reset Every" occurs. The choices are:

ON - The "Highest" High Score is retained in memory and displayed.
OFF - The "Highest" High Score is not retained.

A.4 04 Champion Credits
The operator chooses the number of credits or tickets awarded for a Grand Champion Score. The range of this setting is 00 through 10.

A.4 05 H.S.T.D. 1 Credits
The operator selects the number of credits or tickets to be awarded whenever a player exceeds the previous Highest Score. The range of this setting is 00 to 10.

A.4 06 H.S.T.D. 2 Credits
The operator selects the number of credits or tickets to be awarded whenever a player exceeds the second highest score. The range of this setting is 00 to 10.

A.4 07 H.S.T.D. 3 Credits
The operator selects the number of credits or tickets to be awarded whenever a player exceeds the third highest score. The range of this setting is 00 to 10.

A.4 08 H.S.T.D. 4 Credits
The operator selects the number of credits or tickets to be awarded whenever a player exceeds the fourth highest score. The range of this setting is 00 to 10.

A.4 09 High Score Reset Every
The operator can specify that the game will provide an automatic reset of the displayed "Highest scores", and the number of games to be played before the reset occurs. The values provided upon reset are those selected by the operator in the Back-up High Scores. The range of this setting is OFF (disabled) and 250 to 20, 000.

A.4 10 **Backup Champion**
The operator sets the Back-up Grand Champion Score. The range of this setting is 00 through 99, 900, 000.

A.4 11 **Backup H.S.T.D. 1**
The operator can set the Back-up High Score value. The game automatically restores this value when the High Score Reset Every value is reached. The range of this setting is 00 to 99, 900, 000.

A.4 12 **Backup H.S.T.D. 2**
The operator can set the second Back-up High Score value. The game automatically restores this value when the High Score Reset Every value is reached. The range of this setting is 00 to 99, 900, 000.

A.4 13 **Backup H.S.T.D. 3**
The operator can set the third Back-up High Score value. The game automatically restores this value when the High Score Reset Every value is reached. The range of this setting is 00 to 99, 900, 000.

A.4 14 **Backup H.S.T.D. 4**
The operator can set the fourth Back-up High Score value. The game automatically restores this value when the High Score Reset Every value is reached. The range of this setting is 00 to 99, 900, 000.

Press the Up button to advance to the next desired Adjustment Group, (or press the Down button to return to a previous Adjustment Group). Press the Enter button to activate that group. Press the Up or Down button to cycle through the available adjustments in that group.

A.5 Printer Adjustments (otional board required)

A.5 01 **Column Width**
The operator chooses the column width to be printed. The range of this setting is 22 through 80.

A.5 02 **Lines Per Page**
The operator chooses the amount of lines per page. The range of this setting is 20 through 80.

A.5 03 **Pause Every Page**
The operator chooses whether the printer pauses at the end of a page. The choices are:

YES - The printer does pause.
NO - The printer doesn't pause.

Press the Escape button to return to the Adjustments Menu. Then, press the Escape button again to return to the Main Menu. Once in the Main Menu press the Up button to advance to the next menu selection, the Bookkeeping Menu. Press the Enter button to activate the Bookkeeping Menu, then use the Up or Down button to cycle through the Bookkeeping Menu selections. Press the Enter button to activate the desired Bookkeeping Group when that group appears in the displays.

B. BOOKKEEPING MENU

B.1 Main Audits
B.2 Earning Audits
B.3 Standard Audits
B.4 Feature Audits
B.5 Histograms
B.6 Time-Stamps

Once you have entered the desired bookkeeping group, press the Up or Down button to cycle through the available audits in that group. Audits cannot be set, they can only be cleared by using U1 and U2 from the Utilities Menu.

One-Button Audit System

Information from the Bookkeeping Menu is obtainable directly from the Attract Mode. Continually pressing the Enter button, while in the Attract Mode, will cycle through all of the game audits.

B.1 Main Audits These audits (which also appear in other groups) are the most important, and are grouped here for easier access.

B.1	01	Total Earnings	00
B.1	02	Recent Earnings	00
B.1	03	Free Play Percent	00
B.1	04	Average Ball Time	00
B.1	05	Average Game Time	00
B. 1	06	Games Completed	00
B.1	07	Replay Awards	00
B.1	08	Percent Replays	00
B.1	09	Extra Balls	00
B.1	10	Percent Extra Ball	00

Press the Escape button to return to the Bookkeeping Menu. Press the Up button to advance to the next desired Bookkeeping Group, (or press the Down button to return to a previous group). Press the Enter button to activate that group. Press the Up or Down button to cycle through the available audits in that group.

B.2 Earning Audits

B.2	01	Recent Earnings	00
B.2	02	Recent Left Slot	00
B.2	03	Recent Center Slot	00
B.2	04	Recent Right Slot	00
B.2	05	Recent 4th Slot	00
B.2	06	Recent Paid Credits	00
B.2	07	Recent Service Credits	00
B.2	08	Total Earnings*	00
B.2	09	Total Left Slot*	00
B.2	10	Total Center Slot*	00
B.2	11	Total Right Slot*	00
B.2	12	Total 4th Slot*	00

* Note: These Audits are NOT Resettable. They are a record of the earnings of the game since the "CLOCK 1ST SET" Time -Stamp.

B.4 Feature Audits

B.4	01	11:30 Games	00
B.4	02	11:45 Games	00
B.4	03	Midnight Games	00
B.4	04	Multi-ball	00
B.4	05	Million Plus	00
B.4	06	Hidden Hallway	00
B.4	07	Quick Multi-ball	00
B.4	08	Million Shots	00
B.4	09	Rudy Jaw Hits	00
B.4	10	Ramp Shots	00
B.4	11	Skill Shots	00
B.4	12	Mystery Mirror	00
B.4	13	Mirror Completed	00
B.4	14	Mirror E.B. Lit	00
B.4	15	Mirror Superdog	00
B.4	16	Gangway	00
B.4	17	Gangway E.B. Lit	00
B.4	18	Frenzy Lit	00
B.4	19	Frenzy Collected	00
B.4	20	S-T-E-P Completed	00
B.4	21	Steps Ballshooter	00
B.4	22	Superdog Lane	00
B.4	23	Extra Ball Lit by Steps	00
B.4	24	Superdog Hits	00
B.4	25	Jet Bumper Lane	00
B.4	26	Trap Door Open	00
B.4	27	Trap Door Made	00
B.4	28	Manhole Hits	00
B.4	29	3-way Combo	00
B.4	30	4-way Combo	00
B.4	31	Hallway Shots	00
B.4	32	Special Lit	00

Press the Escape button to return to the Bookkeeping Menu. Press the Up button to the advance to the next desired Bookkeeping Group, (or press the Down button to return to a previous Bookkeeping Group). Press the Enter button to activate that group. Press the Up or Down button to cycle through the available audits in that group.

B.5 Histograms

B.5	01	0.0-0.5 Million Scores	00%	00
B.5	02	0.5-1.0 Million Scores	00%	00
B.5	03	1.0-1.5 Million Scores	00%	00
B.5	04	1.5-2.0 Million Scores	00%	00
B.5	05	2.0-3.0 Million Scores	00%	00
B.5	06	3.0-4.0 Million Scores	00%	00
B.5	07	4.0-5.0 Million Scores	00%	00
B.5	08	5.0-6.0 Million Scores	00%	00
B.5	09	6.0-8.0 Million Scores	00%	00

B.5	10	8.0-10 Million Scores	00%	00
B.5	11	10-15 Million Scores	00%	00
B.5	12	15-20 Million Scores	00%	00
B.5	13	Over 20 Million	00%	00
B.5	14	Game Time 0.0-1.0 Mins	00%	00
B.5	15	Game Time 1.0-1.5 Mins	00%	00
B.5	16	Game Time 1.5-2.0 Mins	00%	00
B.5	17	Game Time 2.0-2.5 Mins	00%	00
B.5	18	Game Time 2.5-3.0 Mins	00%	00
B.5	19	Game Time 3.0-3.5 Mins	00%	00
B.5	20	Game Time 3.5-4.0 Mins	00%	00
B.5	21	Game Time 4-5 Mins	00%	00
B.5	22	Game Time 5-6 Mins	00%	00
B.5	23	Game Time 6-8 Mins	00%	00
B.5	24	Game Time 8-10 Mins	00%	00
B.5	25	Game Time 10-15 Mins	00%	00
B.5	26	Game Time Over 15 Mins	00%	00

Press the Escape button to return to the Bookkeeping Menu. Press the Up button to the advance to the next desired Bookkeeping Group, (or press the Down button to return to a previous Bookkeeping Group). Press the Enter button to activate that group. Press the Up or Down button to cycle through the available audits in that group.

B.6 Time-Stamps

The Time-Stamps Menu allows you to view dates and times that are important to game software.

B.6	01	Current Time
B.6	02	Clock 1st Set
B.6	03	Clock Last Set
B.6	04	Audits Cleared
B.6	05	Coins Cleared
B.6	06	Factory Setting
B.6	07	Last Game Start
B.6	08	Last Replay
B.6	09	Last H.S.T.D. Reset
B.6	10	Champion Reset
B.6	11	Last Printout

Press the Escape button to return to the Bookkeeping Menu. Then, press the Escape button again to return to the Main Menu. Once in the Main Menu press the Up button to advance to the next menu selection, the Printouts Menu.

P. PRINTOUTS MENU

(optional board required)

P.1 Earnings Data
P.2 Main Audits
P.3 Standard Audits
P.4 Feature Audits
P.5 Score Histograms
P.6 Time Histograms
P.7 Time-Stamps
P.8 All Data

The Printouts Menu is a combination of the other menus. This menu allows you to access and print information in the available menu selections.

Press the Enter button to activate the Printouts Menu, then use the Up or Down buttons to cycle through the Printouts Menu selections. Press the Enter button to activate the desired Printouts Group when that group appears in the displays. If no Printer is attached the the message "Waiting for Printer" appears in the displays. Note: Set the print specification from the Adjustment Menu, A.5 Printer Adjustments.

Press the Escape button to return to the Printouts Menu. Then, press the Escape button again to return to the Main Menu. Once in the Main Menu press the Up button to advance to the next menu selection, the Test Menu. Press the Enter button to activate the Test Menu. Use the Up or Down button to cycle through the Test Menu selections. Press the Enter button to activate the desired Test Group when that group appears in the displays.

T. TEST MENU

T.1 Switch Edges
T.2 Switch Levels
T.3 Single Switch
T.4 Solenoid Test
T.5 Flasher Test
T.6 General Illumination
T.7 Sound & Music Test
T.8 Single Lamps
T.9 All Lamps
T.10 Lamp & Flasher Tests
T.11 Display Test
T.12 Rudy Test
T.13 Trap Door Test

T.1 Switch Edges

For all switches, the number on the left indicates the column, the number on the right indicates the row. Example- Switch 23 means 2nd column, 3rd row.

To test the Left and Right Flippers, press the Left or Right Flipper buttons during switch test. The flipper name and switch number should show in the displays. Any other results indicate the system has detected a problem with the flipper circuit.

To activate the Switch Edges Test, from the Test Menu, press the Enter button. The name and number of each switch that is pressed is shown in the displays. If any other switch, or no switch at all is indicated, the system has detected a problem with the switch circuit.

Press Escape to return to the Test Menu. Press the Up button to display the next test, the Switch Levels Test.

T.2 Switch Levels

Once the test name is shown under the Test Menu, press the Enter button. The name and number of each switch that is activated is shown in the displays. This test automatically cycles through all switches that are detected closed.

Press the Escape button to return to the Test Menu. Press the Up button to display the next test, the Single Switch Test.

T.3 Single Switches

Once the test name is shown under the Test Menu, press the Enter button. The Single Switch Test isolates a particular switch by blocking signals from all other switches. Use the Up or Down buttons to select the switch to be tested. Either Open or Closed appears in the displays to indicate the state of the switch at the present time. When the switch is activated, an "A" appears during the active state. Press the Start button to obtain wire color, connector, and fuse information.

Press the Escape button to return to the Test Menu. Press the Up button to display the next test, the Solenoid Test.

FUNHOUSE Switch Matrix

White ——— Green

Dedicated Grounded Switches	Row \ Column	1 Green-Brown	2 Green-Red	3 Green-Orange	4 Green-Yellow	5 Green-Black	6 Green-Blue	7 Green-Violet	8 Green-Gray
Orange-Brown (1) Left Coin Chute D1	1 White-Brown	(9) Right Flipper 11	(17) Slam Tilt 21	(25) S-T-E-P "P" (Lower Right) 31	(33) Left Slingshot (Kicker) 41	(41) Dummy Jaw (Opto) 51	(49) Rt Inside Flipper Return Lane 61	(57) Rt Outside Flipper Return Lane 71	(65) 81
Orange-Red (2) Center Coin Chute D2	2 White-Red	(10) Left Flipper 12	(18) Front Door 22	(26) Top Superdog Standup Target 32	(34) Left Flipper Return Lane 42	(42) Right Outlane 52	(50) Right Ball-shooter 62	(58) Left Trough 72	(66) 82
Orange-Black (3) Right Coin Chute D3	3 White-Orange	Start Button 13	Not Used 23	(27) Upper Left Gangway Rollunder 33	(35) Left Outlane 43	(43) Right Slingshot (Kicker) 53	(51) Right Trough 63	(59) Outhole 73	(67) 83
Orange-Yellow (4) 4th Coin Chute D4	4 White-Yellow	(12) Plumb Bob Tilt 14	(20) Test Position, Always Closed 24	(28) Bottom Superdog Standup Target 34	(36) Wind Tunnel Hole 44	(44) S-T-E-P "T" (Upper Left) 54	(52) S-T-E-P "E" (Upper Center) 64	(60) Center Trough 74	(68) 84
Orange-Green (5) Normal Function / Test Function: Service Credits / Escape D5	5 White-Green	(13) Steps Lights Frenzy 15	(21) Lock Mech Right 25	(29) Steps Track Lower 35	(37) Trap Door 45	(45) Steps Superdog (opto) 55	(53) Dummy Eject Hole 65	(61) Upper Right Loop Switch 75	(69) 85
Orange-Blue (6) Normal Function / Test Function: Volume Down / Down D6	6 White-Blue	(14) Upper Ramp Switch 16	(22) Steps Lights Extra Ball 26	(30) Steps 500,000 36	(38) Rudys Hideout Kickbig 46	(46) Ramp Entrance 56	(54) Upper Right Gangway Lane 66	(62) Trap Door Closed 76	(70) 86
Orange-Violet (7) Normal Function / Test Function: Volume Up / Up D7	7 White-Violet	(15) S-T-E-P "S" (Lower Left) 17	(23) Lock Mech Center 27	(31) Center Superdog Standup Target 37	(39) Left Ball-shooter 47	(47) Jet Bumper Lane 57	(55) Lower Right Drop Hole 67	(63) Upper Right Jet Bumper 77	(71) 87
Orange-Gray (8) Normal Function / Test Function: Begin Test / Enter D8	8 White-Gray	(16) Upper Left Jet Bumper 18	(24) Lock Mech Left 28	(32) Steps Track Upper 38	(40) Ramp Exit Track 48	(48) Tunnel Kickout 58	(56) Lower Jet Bumper 68	(64) 78	(72) 88

Note:
Dedicated Switch are connected directly to ground.

T.4 Solenoid Test

Once the test name is shown under the Test Menu, press the Enter button. The Solenoid Test has three modes, Repeat, Stop, and Running. Only one solenoid should turn on at a time. The system has detected a problem if, more then one solenoid turns on, a solenoid comes on and stays on, or no solenoid turn on during the Repeat or Running Tests. Press the Start button to see the wire color, driver number, connector and, fuse information of any coil, when that coil is displayed.

Repeat - This test allows you to stop and pulse a single coil or flashlamp. Once you have entered the Solenoid Test, coil 1 shows in the displays and the corresponding solenoid activates. Press the Up or Down button to cycle through the solenoids, one at a time, manually. The same solenoid pulses until you press the Up or Down button to move to the next one. Either press the Escape button to return to the Test Menu, or press the Enter button to move to the next test mode.

Stopped- This test allows you to stop the Solenoid Test at any point. Press Enter during the Repeat Test. The Solenoid Test stops. There should not be any solenoids activated while the test is stopped. Either press the Escape button to return to the Test Menu, or the Enter button to move to the next test mode.

Running - This test allows you to cycle through the solenoids automatically. Press the Enter button during the Stopped Test mode. The displays show you the name and number of the solenoid currently being pulsed.

Either press the Enter button to return to the Repeat Test, or press the Escape button to return to the Test Menu. Once in the Test Menu press, the Up button to display the next test, the Flasher Test.

T.5 Flasher Test

Once the test name is shown under the Test Menu, press the Enter button. This test allows you to test the flashlamp part of the solenoid circuit exclusively. This test, like the Solenoid Test, has three test modes Repeat, Stop, and Running. During this test, only one flashlamp circuit should turn on at a time. If, more then one flashlamp circuit turns on, or stays on, or no flashlamp circuit turns on at all the system has detected a problem. Press the Start button to see the wire color, driver number, connector, and fuse information of any flashlamp circuit when that circuit appears in the displays.

Repeat - Press the Enter button to activate this test. The name and number of the first flashlamp circuit shows in the displays and the corresponding bulb(s) flashes. Press the Up or Down button to cycle through all of the flashlamps circuits one at a time, manually. The same flashlamp circuit pulses until you press the Up or Down button to move to the next one. Either, press the Escape button to return to the Test Menu, or press the Enter button to advance to the next test mode.

Stopped - This test allow you to stop the Flasher Test at any time without losing your place. Press the Enter button during the Repeat Test. The Flasher Test stops. There should not be any flashlamp circuit turned on during this test mode. Either press the Escape button to return to the Test Menu, or press the Enter button to advance to the next test mode.

Running - This test allows you to cycle through the flashlamps automatically. Press the Enter button during the Stopped Test mode. The displays show you the name and number of the flashlamp currently being pulsed, and the corresponding bulb(s) flashes.

Either press the Enter button to return to the Repeat Test or, press the Escape button to return to the Test Menu. Once in the Test Menu, press the Up button to display the next test, the General Illumination Test.

FUNHOUSE Solenoid Table

Sol. No.	Function	Solenoid Type	Wire Color	Connections	Driver Trnstr	Solenoid Part Number Flashlamp Type
01	Outhole	High Power	Vio-Brn	J130-1	Q82	AE-26-1200
02	Ramp Diverter	High Power	Vio-Red	J130-2	Q80	AE-26-1200
03	Kickbig	High Power	Vio-Orn	J130-4	Q78	AE-26-1500
04	Tunnel Kickbig	High Power	Vio-Yel	J130-5	Q76	AE-26-1200
05	Trap Door Open	High Power	Vio-Grn	J130-6	Q64	AE-26-1500
06	Trap Closed	High Power	Vio-Blu	J130-7	Q66	SM1-26-600
07	Knocker	High Power	Vio-Blk	J130-8	Q68	AE-23-800
08	Multi-ball Release	High Power	Vio-Gry	J130-9	Q70	A-14189
09	Upper Left Jet Bumper	Low Power	Brn-Blk	J127-1	Q58	AE-26-1200
10	Upper Right Jet Bumper	Low Power	Brn-Red	J127-3	Q56	AE-26-1200
11	Lower Jet Bumper	Low Power	Brn-Orn	J127-4	Q54	AE-23-1200
12	Left (sling) Kicker	Low Power	Brn-Yel	J127-5	Q52	AE-26-1500
13	Right (sling) Kicker	Low Power	Brn-Grn	J127-6	Q50	AE-26-1500
14	Steps Gate	Low Power	Brn-Blu	J127-7	Q48	SZ-34-3500
15	Trough	Low Power	Brn-Vio	J127-8	Q46	AE-26-1200
16	Dummy Eject Hole	Low Power	Brn-Gry	J127-9	Q44	AE-26-1500
17	3 Blue Flashers	Flasher	Blk-Brn	J126-1	Q42	#906
18	Dummy Flasher	Flasher	Blk-Red	J126-2	Q40	#906
19	2 Clock Flashers	Flasher	Blk-Orn	J126-3	Q38	#906
20	2 Superdogs	Flasher	Blk-Yel	J126-5	Q36	#906
21	Mouth Motor	Special	Blu-Grn	J126-6	Q28	A-13997
22	Up/Down Driver	Special	Blu-Blk	J126-7	Q30	C-13963
23	3 Red Flashers	Special	Blu-Vio	J126-8	Q34	#906
24	3 Clear Flashers	Special	Blu-Gry	J126-9	Q32	#906
25	Eyes Right	Special	Blu-Brn	J122-1	Q26	SM-30-1100
26	Eyelids Open	Special	Blu-Red	J122-3	Q24	SM-30-1100
27	Eyelids Closed	Special	Blu-Orn	J122-4	Q22	SM-30-1100
28	Eyes Left	Special	Blu-Yel	J122-5	Q20	SM-30-1100
	General Illumination Circuits					
01	Upper Backglass	G.I.	Wht-Brn	J120-7	Q18	#555
02	Front Playfield	G.I.	Wht-Vio	J119-1	Q10	#555
03	Rear Playfield	G.I.	Wht-Yel	J121-9	Q14	#555
04	Center Backglass/Rt Rear Pfd	G.I.	Wht-Orn	J120-8	Q16	#555
05	Top Playfield	G.I.	Wht-Grn	J120-10	Q12	#555
	Lower Right Flipper		Blu-Yel	J109-7		FL-11630
	Lower Left Flipper		Gry-Yel	J109-5		FL-11630
	Upper Left Flipper		Gry-Yel	J109-5		Fl-11753

T.6 General Illumination

Once the test name is shown under the Test Menu, press the Enter button. This test allows you to check all of the General Illumination circuits. There are two modes of operation, Stop and Run. To obtain wire color, driver number, connector, and fuse information, press the Start button when the desired General Illunination circuit appears in the displays.

Stop - Press the Up or Down buttons to cycle through the General Illumination Test manually. All illumination is tested first, followed by an individual circuit test. The circuit name and number shows in the displays while the corresponding lamps lights. If any other results occur the system has detected an error.

Run - Press the Enter button any time during manual testing and the General Illumination Test cycles through automatically. For each circuit shown in the displays the corresponding bulb should light. If any other results occurs the system has detected a problem.

Either press the Enter button to return to Stop Test, or the Escape button to return to the Test Menu. Once in the Test Menu press the Up button to advance to the next test, the Sound and Music Test .

T.7 Sound and Music Test

Once the test name is shown under the Test Menu, press the Enter button. The Sound and Music Test allows you to check the audio circuits. This test has three modes for testing the sound and music circuits, Running, Repeat and Stop.

Running - Press the Enter button when Sound and Music Test is displayed. This test steps through a sequence of sounds and music. Pressing the Up or Down button during this portion of the Sound and Music test allows you to advance to a particular sound or tune without having to wait for the program to play all the sounds available in the test. For each name and number that appears in the displays a sound or tune should be heard. Any other results indicates the system has detected a problem.

Repeat - Pressing the Enter button at any time during the Running portion of the Sound and Music Test causes the program to stop and repeat a particular sound or tune. The same sound should repeat continuously until the Up or Down button is pressed. Any other results indicates the system has detected a problem.

Stop - Press the Enter button at any time during the Repeat test to stop this test altogether. Nothing should be heard. Any other results indicates the system has detected a problem.

Use the Enter button to return to the Run test, or the Escape button to return to the Test Menu. Once in the Test Menu press the Up button to display the next test, the Single Lamp Test.

T.8 Single Lamp Test

For all lamps, the number on the left indicates the column, the number on the right indicates the row. Example- Lamp 23 means 2nd column, 3rd row.

Once the test name is shown under the Test Menu, press the Enter button. This test allows you to test each lamp circuit individually. Press the Up or Down button to cycle through this test. For each name and number that is shown in the displays the corresponding lamp should light. Any other results indicates the system has detected a problem. Press the Start button to obtain wire color, connector, and fuse information when the desired lamp is lit.

Press the Escape button to return to the Test Menu. Press the Up button to display the next test, the All Lamps Test.

T.9 All Lamps Test

Once the test name is shown under the Test Menu, press the Enter button. This test causes all the controlled lamps to flash at the same time. Every controlled lamp should flash. Any other results indicates the system has detected a problem.

Press the Escape button to return to the Test Menu. Press the Up button to display the next test, the Lamp and Flasher Test.

T.10 Lamp and Flasher Test

Once the test name is shown under the Test Menu, press the Enter button. This test causes all the flashlamps and the controlled lamps to flash at the same time. The controlled lamps blink, while the flashlamps cycle from highest to lowest. Any other results indicates the system has detected a problem.

Press the Escape button to return to the Test Menu. Press the Up button to display the next test, the Display Test.

FUNHOUSE Lamp Matrix

Yellow (B+) Red

Row \ Column	1 Yellow-Brown	2 Yellow-Red	3 Yellow-Orange	4 Yellow-Black	5 Yellow-Green	6 Yellow-Blue	7 Yellow-Violet	8 Yellow-Gray
1 Red-Brown	(1) Gangway 75,000 (Left) 11	(9) Clock 45 Minutes 21	(17) Clock 40 Minutes 31	(25) Clock 9 o' clock 41	(33) Lower Left Jet Bumper 51	(41) Left & Inside Rt Flipper Lanes (x 2) 61	(49) Magic Mirror Lights Extra Ball 71	(57) Million Plus 81
2 Red-Black	(2) Gangway 100,000 12	(10) Clock 8 o' clock 22	(18) Clock 35 Minutes 32	(26) Clock 7 o' clock 42	(34) Upper Left Jet Bumper 52	(42) S-T-E-P "S" 62	(50) Upper Right Jet Bumper 72	(58) Special Outlanes (x 2) 82
3 Red-Orange	(3) Gangway 150,000 13	(11) Clock 6 o' clock 23	(19) Clock 30 Minutes 33	(27) Clock 5 o' clock 43	(35) Superdog Lamp (x 2) 53	(43) Trap Door Bonus 63	(51) S-T-E-P "P" 73	(59) Trap Door Frenzy 83
4 Red-Yellow	(4) Gangway 200,000 14	(12) Clock 25 Minutes 24	(20) Clock 20 Minutes 34	(28) Clock 4 o' clock 44	(36) Steps Lights Frenzy 54	(44) Ramp Scores 250,000 64	(52) Magic Mirror Lights Million 74	(60) Ramp "Steps" Lamp 84
5 Red-Green	(5) Gangway 250,000 15	(13) Clock 15 Minutes 25	(21) Clock 3 o' clock 35	(29) Clock 2 o' clock 45	(37) Steps Lights Extra Ball 55	(45) S-T-E-P "T" 65	(53) Magic Mirror Lights Jet Bumpers 75	(61) Magic Mirror Arrow 85
6 Red-Blue	(6) Gangway Lights Extra Ball 16	(14) Clock 10 Minutes 26	(22) Clock 1 o' clock 36	(30) Clock 5 Minutes 46	(38) Steps 500,000 56	(46) Upper Left Gangway Lane 66	(54) Magic Mirror Lights Superdog 76	(62) S-T-E-P "E" 86
7 Red-Violet	(7) Shoot Again 17	(15) Clock 12 Minutes 27	(23) Clock 11 o' clock 37	(31) Clock 55 Minutes 47	(39) Ramp Overhead Lamp 57	(47) Extra Ball Lamp 67	(55) Magic Mirror Opens Gate 77	(63) Million 87
8 Red-Gray	(8) Steps Open (Gate) 18	(16) Clock 0 Minutes 28	(24) Clock 50 Minutes 38	(32) Clock 10 o' clock 48	(40) Right Gangway Overhead Lamp 58	(48) Lock 68	(56) Magic Mirror Lights Quick Multi-ball 78	(64) Start Button (Cabinet) 88

T.11 Display Test

Once the test name is shown under the Test Menu, press the Enter button. This test allows you to cycle through all of the display circuits. Each segment and digit should light in its turn. If a segment or digit never lights, or stays lit all the time, the system has detected a problem. There are two modes for testing the displays, Run and Stop.

Run - Press the Enter button when the Display Test is shown. The test cycles through several phases automatically. Each phase is designed to test either an entire digit or a specific segment.

Stop - Press the Enter button at any time during the Run portion of the Display Test and the test stops. Once the test stops use the Up or Down buttons to cycle through the test manually. Press the Enter button again to resume the running test automatically.

Press the Escape button to return to the Test Menu. Press the Up button to advance to the next test, the Rudy Test.

T.12 Rudy Test

Once the test name is shown under the Test Menu, press the Enter button. This test has three modes of operation and allows you to test all of the solenoids that operate Rudy. Each solenoid should operate in it's turn. If more then one turns On at a time, or stays On, or if nothing turns On during the Run or Repeat test the system has detected a problem. Press the Up or Down button to select the solenoid to be tested.

Repeat - This test allows you to pulse a single solenoid. Press the Up or Down button to cycle through the solenoids one at a time. The same solenoid pulses until you press the Up or Down button to move to the next one. Either press the Escape button to return to the Test Menu, or press the Enter button to move to the next test mode.

Stop - Press the Enter button during the Repeat test and the Rudy Test stops. There should not be any solenoids activated at this point. Either press the Escape button to return to the Test Menu, or press the Enter button to move to the next test mode.

Run - This test allow you to automatically cycle through the solenoids that operate Rudy. Press the Enter button during the Stop test mode. The displays show you the name of the solenoid being activated.

The last item in the Rudy Test is the Run Mouth Test. This test opens and closes the mouth. Press the Enter button to activate.

Press the Escape button to return to the Test Menu. Press the Up button to advance to the next test, the Trap Door Test.

T.13 Trap Door Test

Once the test name is shown under the Test Menu, press the Enter button. This test has three modes of operation. The last character of the top display shows an 'X' when the door is closed.

Repeat - The repeat test pulses a single coil. either the up or down coil, until the Up or Down button is pressed to move to the next coil.

Stop - Press the Enter button during the Repeat test and the Trap Door stops activating.

Run - Press the Enter button during the Stop test and the Trap Door cycles Up and Down automatically.

Either press the Enter button to return to the Repeat test mode, or press the Escape button to return to the Test Menu. Then, press the Escape button again to return to the Main Menu. Once in the Main Menu press the Up button to advance to the next menu selection, the Utilities Menu.

Press the Enter button to activate the Utilities Menu, then use the Up or Down button to cycle through the Utilities Menu selections. Press the Enter button to activate the desired individual Utility or Utilities Group when it appears in the displays. If you change a utility setting and realize you have made a mistake, press the Escape button while "Saving New Value" is still in the displays. The original setting is retained and the new setting is ignored.

U. UTILITIES MENU

U.1 Clear Audits
U.2 Clear Coins
U.3 Reset H.S.T.D.
U.4 Set Time & Date
U.5 Custom Message
U.6 Set Game I.D.
U.7 Factory Adjustments
U.8 Factory Resets
U.9 Presets
U.10 Clear Credits
U.11 Auto Burn-in

U.1 Clear Audits

Press the Enter button to clear the Standard Audits, Feature Audits, and Histograms. Press the Up button to display the next utility.

U.2 Clear Coins

Press the Enter button to clear the Earnings Audits. Press the Up button to display the next utility.

U.3 Reset H.S.T.D.

Press the Enter button to clear the High Score to Date Table and the Grand Champion. Press the Up button to display the next utility.

U.4 Set Time and Date

Press the Enter button to activate the time and date. Use the Up or Down button to change the value, then press the Enter button to lock in that value. If you make a mistake press the Escape button while "Saving New Value" is displayed. Press the Up button to move to the next utility.

U.5 Custom Message

This utility allows the operator to install a message that appears in the displays during the Attract Mode. Press the Enter button to activate the Custom Message. Use the Up or Down button to rotate letters. Use the Start button to rotate punctuation marks, (if desired). Press the Enter button to lock in the desired letter and punctuation.

U.6 Set Game I.D.

This utility allows the operator to install a message, such as game location, that only appears on printouts . Press the Enter button to activate Set Game I.D.. Use the Up or Down button to rotate letters. Use the Start button to rotate punctuation marks, (if desired). Press the Enter button to lock in the desired letter and punctuation.

U.7 Factory Adjustment

Press the Enter button to restore the adjustments to factory settings, then press the Up button to display the next utility.

U.8 Factory Reset

Press the Enter button to restore the adjustments to their factory setting, clear the Audits, H.S.T.D Table, and Custom Message/Game I.D. Press the Up button to display the next utility.

U.9 Presets

Press the Enter button to activate the Presets Group. Use the Up or Down buttons to cycle through the available Presets. When the desired preset is displayed, press the Enter button to lock in that Preset. If you realize you have made a mistake, press the Escape button while "Saving New Value" is displayed. The new value is ignored and the original value is retained.

U.9 01 Install Extra Easy

The operator can change the game play difficulty adjustments to a combination that is MUCH LESS difficult than the Factory Settings. The Game Difficulty Setting Table lists the adjustments and the settings that comprise the 'Extra Easy' Group.

U.9 02 Install Easy

The operator can change the game play difficulty adjustments to a combination that is somewhat LESS difficult than the Factory Settings. The Game Difficulty Setting Table lists the adjustments and the settings that comprise the 'Easy' Group.

U.9 03 Install Medium

The operator can change the game play difficulty adjustments to a combination that is about the SAME difficulty as the Factory Settings. The Game Difficulty Setting Table lists the adjustments and settings that comprise the 'Medium' Group.

U.9 04 Install Hard

The operator can change the game play difficulty adjustments to a combination that is somewhat MORE difficult than Factory Settings. The Game Difficulty Setting Table lists the adjustments and settings that comprise the 'Hard' Group.

U.9 05 Install Extra Hard

The operator can change the game play difficulty adjustments to a combination that is MUCH MORE difficult than Factory Settings. The Game Difficulty Setting Table lists the adjustments and settings that comprise the 'Extra Hard' Group.

FUNHOUSE
Game Difficulty Setting Table for U.S. / Canadian / French Games

Adj #	Adj Description	Extra Easy U.9 01	Easy U.9 02	Medium U.9 03 (factory)	Hard U.9 04	Extra Hard U.9 05
A.2 01	1st Round Start	10 o' Clock	9 o' Clock	8 o' Clock	7 o' Clock	6 o' Clock
A.2 02	Subsequent Start	5 o' Clock	5 o' Clock	5 o' Clock	4 o' Clock	3 o' Clock
A.2 03	Hallway Timer	Long	Long	Long	Long	Short
A.2 04	Gangway Timer	Long	Long	Short	Short	Short
A.2 05	Gangway Start	200,000	200,000	150,000	150,000	150,000
A.2 06	Gangway Memory	Yes	Yes	Yes	Yes	Yes
A.2 07	Gangway E.B. Mem	Yes	Yes	Yes	Yes	Yes
A.2 08	Mirror E.B. Memory	Yes	Yes	Yes	No	No
A.2 09	Steps E.B. Memory	Yes	No	No	No	No
A.2 10	Maximum Steps E.B.	02	02	01	01	01
A.2 11	Special Memory	No	No	No	No	No
A.2 12	Special Lights In	Round 2	Round 2	Round 2	Round 2	Round 3
A.2 13	Relight Mirror	Yes	Yes	Yes	Yes	No
A.2 14	Mirror Memory	Easy	Easy	Easy	Medium	Easy
A.2 15	Free Frenzy Lamp	Yes	Yes	Yes	Yes	No
A.2 16	Frenzy Memory	Yes	Yes	Yes	Yes	No

FUNHOUSE
Game Difficulty Setting Table for German/European Games

Adj #	Adj Description	Extra Easy U.9 01	Easy U.9 02	Medium U.9 03 (factory)	Hard U.9 04	Extra Hard U.9 05
A.2 01	1st Round Start	9 o' Clock	8 o' Clock	7 o' Clock	6 o' Clock	5 o' Clock
A.2 02	Subsequent Start	5 o' Clock	5 o' Clock	5 o' Clock	4 o' Clock	3 o' Clock
A.2 03	Hallway Timer	Long	Long	Long	Long	Short
A.2 04	Gangway Timer	Long	Long	Short	Short	Short
A.2 05	Gangway Start	200,000	200,000	150,000	150,000	150,000
A.2 06	Gangway Memory	Yes	Yes	Yes	Yes	Yes
A.2 07	Gangway E.B. Mem	Yes	Yes	Yes	Yes	Yes
A.2 08	Mirror E.B. Memory	Yes	Yes	Yes	No	No
A.2 09	Steps E.B. Memory	Yes	No	No	No	No
A.2 10	Maximum Steps E.B.	02	02	01	01	01
A.2 11	Special Memory	No	No	No	No	No
A.2 12	Special Lights In	Round 2	Round 2	Round 2	Round 2	Round 3
A.2 13	Relight Mirror	Yes	Yes	Yes	Yes	No
A.2 14	Mirror Memory	Easy	Easy	Easy	Medium	Easy
A.2 15	Free Frenzy Lamp	Yes	Yes	Yes	Yes	No
A.2 16	Frenzy Memory	Yes	Yes	Yes	Yes	No

U.9 06 Install 5 Ball

The operator can change the game to 5 ball play, including the changing of certain features to the recommended 5-ball level. The Preset Game Adjustments Table for U.S./Canadian Games lists the adjustments and settings that comprise the 'Install 5 Ball' Group.

U.9 07 Install 3 Ball

The operator can change the game to 3 ball play, including the changing of certain features to the recommended 3-ball level. The Preset Game Adjustments Table for U.S./Canadian Games lists the adjustments and settings that comprise the 'Install 3 Ball' Group.

FUNHOUSE

Preset Game Adjustments Table for U.S./ Canadian Games

Adj #	Adj Description	Install 5-ball U.9 06	Install 3-ball U.9 07
A.1 01	Balls / Game	5	3
A.1 07	Replay Start	9,100,000	7,200,000
A.2 01	1st Round Start	5 o' clock	8 o' clock
A.2 02	Subsequent Start	5 o' clock	5 o' clock
A.2 05	Gangway Start	100,000	150,000
A.2 08	Mirror E.B. Memory	No	Yes
A.2 12	Special Lights In	Round 3	Round 2
A.2 13	Re-light Mirror	Yes	Yes
A.2 14	Mirror Memory	Medium	Easy
A.2 15	Free Frenzy Lamp	No	Yes

U.9 08 Install Add-A-Ball

The operator utilizes this option to delete all Free Play awards and replace them with Extra Ball awards. Individual adjustments are affected, as follows:

Ad	Name	New Setting
A.1 13	Replay Boost	Off
A.1 14	Replay Award	Ex. Ball
A.1 15	Special Award	Ex. Ball
A.1 17	Extra Ball Ticket	No
A.1 19	Match Feature	Off
A.4 04	Champion Credits	00
A.4 05	High Score 1 Credits	00
A.4 06	High Score 2 Credits	00
A.4 08	High Score 3 Credits	00
A.4 07	High Score 4 Credits	00

U.9 09 Install Ticket

The operator utilizes this option to delete Credit awards and replace them with Ticket awards. Individual adjustments are affected as follows.

Ad	Name	New Settings
A.1 14	Replay Award	Ticket
A.1 15	Special Award	Ticket
A.1 16	Match Award	Ticket
A.1 17	Ex. Ball Ticket	Yes
A.4 02	H.S.T.D. Award	Ticket

U.9 10 Install Novelty

The operator utilizes this option to removes all Free Play and Extra Ball awards. Individual adjustments are affected as follows:

Ad	Name	New Setting
A.1 04	Max. Ex. Ball	Off
A.1 05	Replay System	Fixed
A.1 09	Replay Level 1	Off
A.1 10	Replay Level 2	Off
A.1 11	Replay Level 3	Off
A.1 12	Replay Level 4	Off
A.1 15	Special Award	Points
A.1 19	Match Feature	Off
A.4 01	Highest Score	On
A.4 04	Champion Credits	00
A.4 05	High Score 1 Credits	00
A.4 06	High Score 2 Credits	00
A.4 07	High Score 3 Credits	00
A.4 08	High Score 4 Credits	00

U.9 11 Install Buy-in

The operator uses this option to automatically set game pricing to 1 for 50¢/2 for $1.00 and 1 Coin Buy-in (A.3 19) to YES.

U.9 17 Install German 1• • For German Jumpered CPU Boards only.

The operator uses this adjustment to modify the game pricing and the type of game play. The Preset Game Adjustments Table for German/European Games lists the adjustments and settings that comprise the 'Install German 1' Group.

U.9 18 Install German 2•

The operator uses this adjustment to modify the game pricing and the type of game play. The Preset Game Adjustment Table for German/ European Games lists the adjustments and settings that comprise the 'Install German 2' Group.

U.9 19 Install German 3•

The operator uses this adjustment to modify the game pricing and the type of game play. The Preset Game Adjustments Table for German/European Games lists the adjustments and settings that comprise the 'Install German 3' Group.

U.9 20 Install German 4•

The operator uses this adjustment to modify the game pricing and the type of game play. The Preset Game Adjustments Table for German/European Games lists the adjustments and settings that comprise the 'Install German 4' Group

U.9 21 Install German 5•

The operator uses this adjustment to modify the game pricing and the type of game play. The Preset Game Adjustments Table for German/European Games lists the adjustments and settings that comprise the 'Install German 5' Group.

U.9 22 Install German 6•

The operator uses this adjustment to modify the game pricing and the type of game play. The Preset Game Adjustments Table for German/European Games lists the adjustments and settings that comprise the 'Install German 6' Group.

FUNHOUSE

Preset Game Adjustments Table for German/European Games

Adj #	Adj Description	German 1 U.9 17	German 2 U.9 18	German 3 U.9 19	German 4 U.9 20	German 5 U.9 21	German 6 U.9 22
A.1 14	Replay Award	Credit	Ticket	Audit	Credit	Ticket	Audit
A.1 15	Special Award	Credit	Ex. Ball	Points	Credit	Ex. Ball	Points
A.1 16	Match Award	Credit	Ticket	Credit	Credit	Ticket	Credit
A.1 19	Match Feature	7 %	7 %	Off	7 %	7 %	Off
A.3 01	Game Pricing	6 spiele/5 DM	6 spiele/5 DM	6 spiele/5 DM	7 spiele/5 DM	7 spiele/5 DM	7 spiele/5 DM
A.4 02	H.S.T.D. Award	Credit	Ticket	Credit	Credit	Ticket	Credit
A.4 04	Champion Credits	08	08	00	08	08	00
A.4 05	High Score 1 Credits	01	01	00	01	01	00
A.4 06	High Score 2 Credits	00	00	00	00	00	00
A.4 07	High Score 3 Credits	00	00	00	00	00	00
A.4 08	High Score 4 Credits	00	00	00	00	00	00
A.4 10	Backup Champion	15.000.000	15.000.000	00	15.000.000	15.000.000	00
A.4 11	Backup High Score 1	12.000.000	12.000.000	00	12.000.000	12.000.000	00
A.4 12	Backup High Score 2	11.000.000	11.000.000	00	11.000.000	11.000.000	00
A.4 13	Backup High Score 3	10.000.000	10.000.000	00	10.000.000	10.000.000	00
A.4 14	Backup High Score 4	9.000.000	9.000.000	00	9.000.000	9.000.000	00

U.9 23 Install French 1* *For French Jumpered CPU Boards only.

The operator uses this adjustment to modify the game pricing and the type of game play. The Preset Game Adjustments Table for French Games lists the adjustments and setting that comprise the 'Install French 1' Group.

U.9 24 Install French 2*

The operator uses this adjustment to modify the game pricing and the type of game play. The Preset Game Adjustments Table for French Games list the adjustments and settings that comprise the 'Install French 2' Group.

U.9 25 **Install French 3***

The operator uses this adjustment to modify the game pricing and the type of game play. The Preset Game Adjustments Table for French Games list the adjustments and settings that comprise the 'Install French 3' Group.

U.9 26 **Install French 4***

The operator uses this adjustment to modify the game pricing and the type of game play. The Preset Game Adjustments Table for French Games lists the adjustments and setting that comprise the 'Install French 4' Group.

U.9 27 **Install French 5***

The operator uses this adjustment to modify the game pricing and the type of game play. The Preset Game Adjustments Table for French Games lists the adjustments and settings that comprise the 'Install French 5' Group.

U.9 28 **Install French 6***

The operator uses this adjustment to modify the game pricing and the type of game play. The Preset Game Adjustments Table for French Games lists the adjustments and settings that comprise the 'Install French 6' Group.

FUNHOUSE

Preset Game Adjustments Table for French Games

Adj #	Adj Description	French 1 U.9 23	French 2 U.9 24	French 3 U.9 25	French 4 U.9 26	French 5 U.9 27	French 6 U.9 28
A.2 05	Gangway Start	200,000	150,000	250,000	200,000	200,000	N/A
U.9 06	Install 5 Ball	N/A	N/A	N/A	N/A	N/A	Yes

Press the Escape button to return to the Presets menu. Then press the Up button to display the next utility.

U.10 Clear Credits

Press nthe Enter button to clear the game Credits. Press the Up button to display the next utility.

U.11 Auto Burn-in

Press the Enter button to activate Auto Burn-in. This utility allows you to automatically cycle through several tests. This helps in finding intermittent problems. The tests that Auto Burn-in cycles through are the Display Test, the Sound and Music Test, the All Lamps Test, the Solenoid Test, the Flashers Test, and the General Illumination Test.

Press the Escape button to return to the Utilities Menu. Then, either press the Up or Down button to return to a previous Utilities Menu Group, or Press the Escape button again to return to the Main Menu. Once in the Main Menu either use the Up or Down buttons to return to a previous menu selection, or press the Escape button again to return to the Attract Mode.

PROBLEM ANALYSIS MESSAGES

The WPC game program has a great capability to aid the operator and service personnel: At Game Turn-on (and after pressing the Begin Test switch) once the game has been operating for an extended period, the player score displays may signal with a message, "Press ENTER for Test Report", that the game program has detected a possible problem with the game.

To obtain details of the problem, open the coin door and press the Begin Test switch. Press the Enter button to begin displaying the message(s). The following messages apply to your **FUNHOUSE** game.

Check Switch ##. This message indicates that at least one switch was stuck 'On' at game turn-on or has NOT been actuated during ball play (for 90 balls or ≈30 games) by displaying the message "Adjust Switch ##", listing each problem switch by number. (The game program compensates the game play requirements affected by each disabled switch to allow 'nearly normal' play. This helps keep **FUNHOUSE** earning, until the service technician can repair the problem, bringing the game back to its normal good profits!)

To verify the problem, refer to the Test Menu text describing Switch Testing, and check each reported switch using applicable switch tests. Always check switch operation using a ball, to simulate game conditions. (Switch problems may often be resolved by adjusting the wire switch actuators, fixing switch circuitry problems, securing loose connectors, etc. Mechanisms using 'opto switches' (drop targets, etc.) need to be checked for proper power connections (+12V dc and ground).

Pinball Missing. **FUNHOUSE** normally uses three balls; however, it will operate with one or two balls. This message announces that a ball is missing or stuck somewhere. When the ball is located, return it to the game via the Outhole. Other possibilities for this problem could be malfunctions of the Ball Trough switches or the Ball Shooter switch.

xxxxx Sw. is Stuck On. This message indicates that a switch, which is not usually On, remains in the On position after the game is switched on. The stuck switch is essential for game play (for example, a coin chute switch, the slam tilt switch, the plumb bob tilt switch), and should be cleared to permit proper game operation.

Ground Short Row-N, Wht-xxx. Frequent appearance of this message requires activation of the Switch Levels Test to locate the switch causing the "WHT-xxx ROW x SHORT" message. Possible 'row short' causes are: 1) Slam Tilt (or other coin door) switch touching the grounded coin door; 2) A *leaf-type*, playfield switch touching a grounded part; 3) Players poking metallic objects (wires, coat hangers, etc.) into the game; 4) Switch cable insulation pierced or damaged allowing bare wire contact with a grounded part; 5) All switches in a row closing at the same time (Note: This instance is NOT a switch problem; however, for most games this is a very rare possibility).

Factory Settings Restored. Repeated appearance of this message indicates that the CMOS RAM no longer retains any custom Pricing or Game Adjustment settings and has reverted to factory default settings. Generally, the following CPU checks will isolate the cause of the CMOS RAM memory failure. The voltage at pin 28 of U8 should be +5V (game turned on) and at least +3.8V (game turned off). When the voltage drops below +3.8V, memory reset occurs. Check the batteries and battery holder. Be sure that the batteries are good and that there is no contamination on the battery holder terminals. Turn the game OFF, and use an ohmmeter to check diodes D1 and D2 on the CPU Board. D1 should read 0 ohms when forward-biased and infinite ohms when reverse-biased. D2 should read 15 ohms when forward-biased and infinate ohms when reverse-biased.

U6 Checksum Error. The game ROM checksum is invalid. If this occurs replace the game ROM.

Time and Date Not Set. The real time clock is not running. If this occurs go to U.4 of the Utilities Menu and set the time and date.

The CPU has three L.E.D.s located on the upper left side of the board. On game power-up the top and bottom L.E.D.s turn On for a moment the , the top L.E.D. turns Off and the center L.E.D. starts to blink rapidly. The bottom L.E.D. remains On. The system has detected a problem if the following happens:

CPU Board L.E.D. Error Codes

Center L.E.D. blinks one time	-	ROM Error U6
Center L.E.D. blinks two times	-	RAM Error U8
Center L.E.D. blinks three times	-	Custom Chip Failure U9

MAINTENANCE INFORMATION

Regular maintenance is essential to a game's continuing contribution to the operator's earnings.

LUBRICATION

The two main lubrication points of the Ball Shooter Lane Feeder mechanism are the pivots for the arm. Note that the mechanism of other playfield devices are somewhat similar to the Ball Shooter Lane Feeder Device; and have the same lubrication requirements as the Ball Shooter Lane Feeder Device. A medium viscosity oil (20W or 30W) is satisfactory for these devices.

Because of the functional design (arm-actuated via solenoid plunger operation), the pivot points of the Left and Right Kickers ("Slingshots") all require lubrication as a regular servicing procedure.

Lubrication to ensure proper operation also applies to the target blades of the Drop Targets. MBI Instrument Grease, also known as Drop Target Switch Lubricant, with a Williams' part number of 20-8886, is a recommended lubricant.

SWITCH CONTACTS

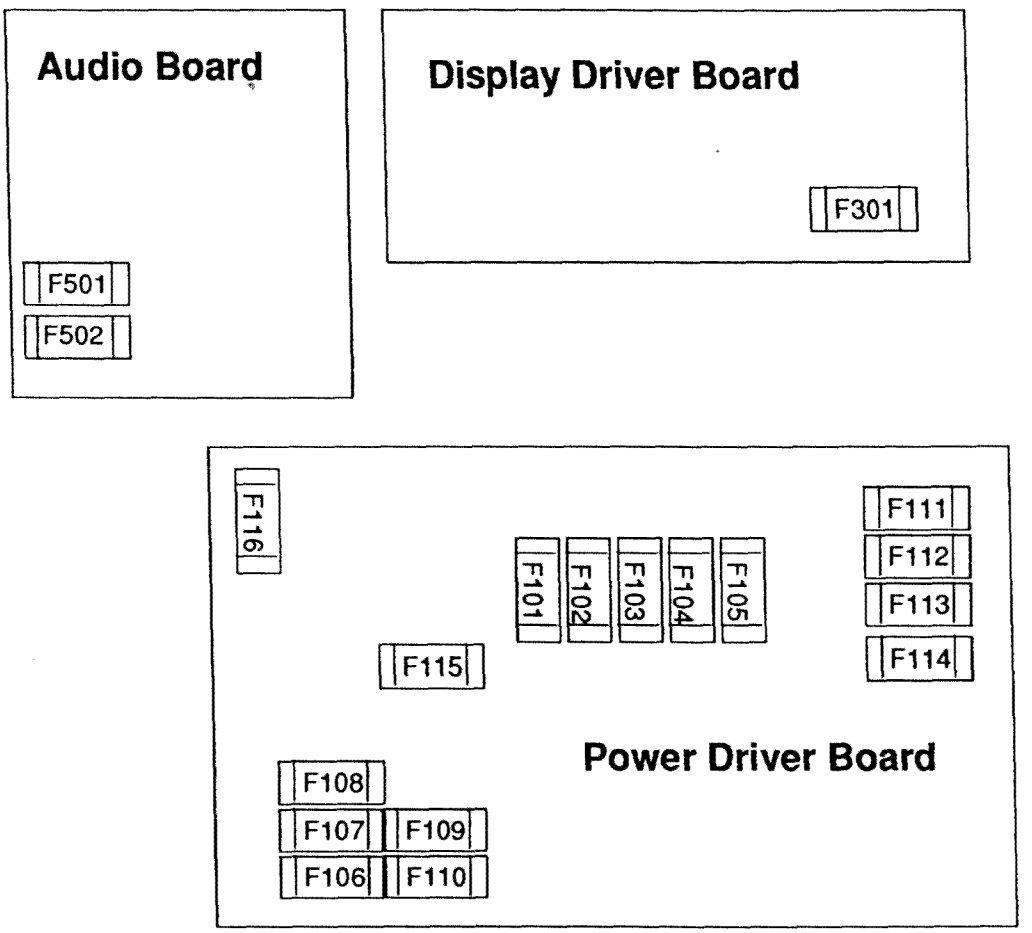
For proper game operation, switch contacts should be free of dust, dirt, contamination, and corrosion. Blade switch contacts are plated to resist corrosion. Cleaning blade switch contacts requires gentle closing of the contacts on a clean business card or piece of paper, and then pulling the paper about 2 inches, which should restore the clean contact surface. Adjust the switch contacts to a 1/16-inch gap.

CLEANING

Good game action and extended playfield life are the results of regular playfield cleaning. During each collection stop, the playfield glass should be removed and thoroughly cleaned and the playfield should be wiped off with a clean, lint-free cloth. The game balls should be cleaned and inspected for any chips, nicks, or pits. Replace any damaged balls to prevent playfield damage.

Regular, more extensive, playfield cleaning is recommended. However, avoid excessive use of water and caustic or abrasive cleaners because they tend to damage the playfield surface. Playfield wax (or any carnauba based wax), or polish may be used sparingly, to prevent a buildup on the playfield surface. Do not use cleaners containing petroleum distillates on any playfield plastics because they may dissolve the plastic material or damage the artwork.

Fuse List



Audio Board

F501	-25V Circuit	3A, S.B.
F502	+25V Circuit	3A, S.B.

Display Driver Board

F301	±100V Circuit	3/8A, S.B.

Power Driver Board

F101	Left Flipper	2.5A, S.B.
F102	Right Flipper	2.5A, S.B.
F103	Solenoid 25-28	3A, S.B.
F104	Solenoids 9-16	3A, S.B.
F105	Solenoids 1-8	3A, S.B.
F106	G.I. #2 Wht-Vio	5A, S.B.
F107	G.I. #3 Wht-Yel	5A, S.B.
F108	G.I. #5 Wht-Grn	5A, S.B.
F109	G.I. #4 Wht-Orn	5A, S.B.
F110	G.I. #1 Wht-Brn	5A, S.B.
F111	Flasher Sceondary	5A, S.B.
F112	Solenoid Secondary	5A, S.B.
F113	+5V Logic	5A, S.B.
F114	+18V Lamp Matrix	8A, N.B.
F115	+12V Switch Matrix	3/4A, S.B.
F116	+12V Secondary	3A, S.B.

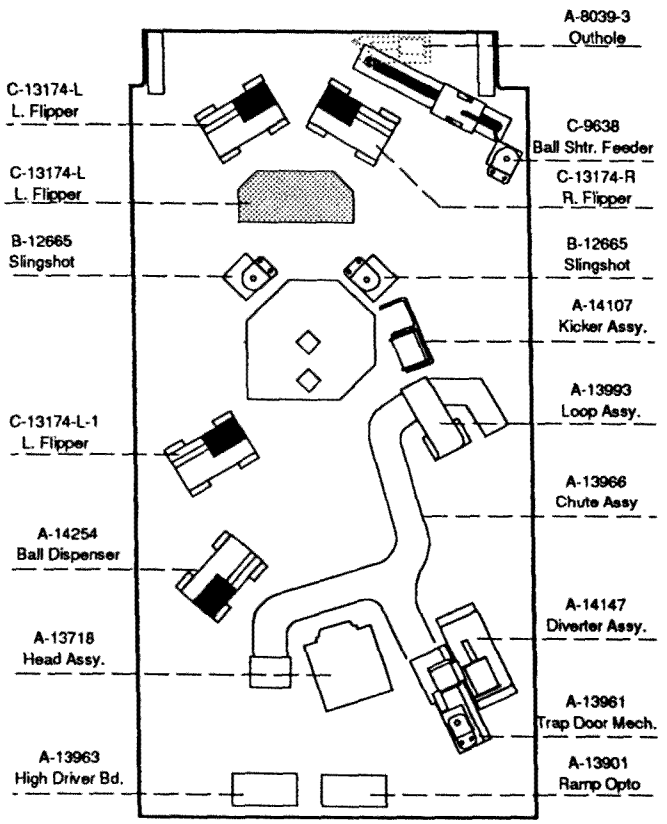
Notes

Section 2
Game Parts Information

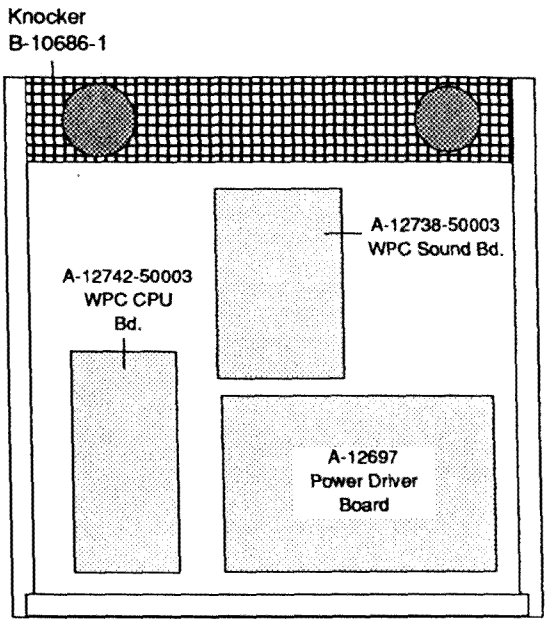
- ***Parts Lists & Diagrams***

Game Circuit Boards and Major Mechanisms
Power Driver Board
Audio Board
CPU Board
Display Driver Board
Lamp Boards
Opto Switch Board
High Current Driver Board
Coin Door Interface Board
All Major Mechanism Assemblies of FUNHOUSE
Solenoids/Flashers
Switches
Lamps
Playfield Parts

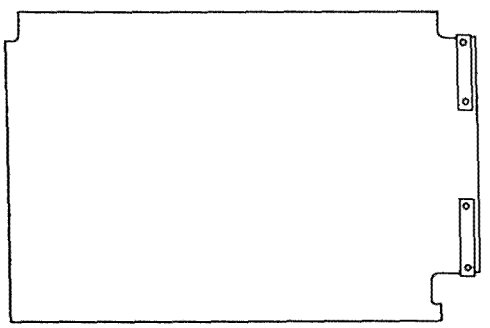
Location Diagram - Major Mechanism & Game Circuit Board



Under Side of Playfield, Viewed in Raised Position

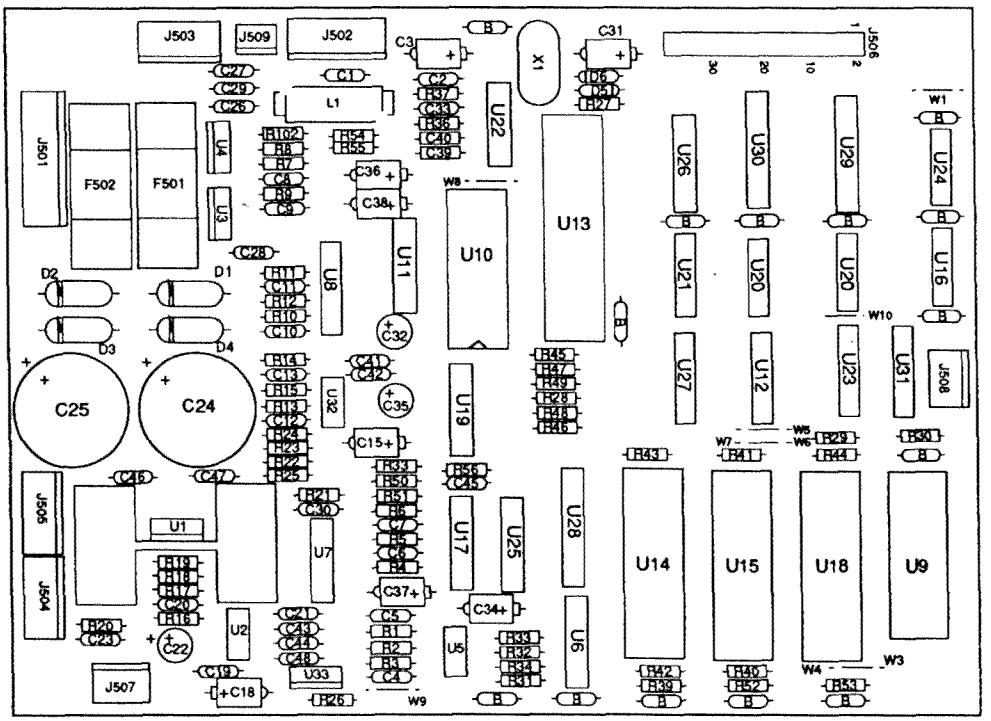


Backbox



Insert Board, Inner Side View

A-12738-50003 WPC Audio Board

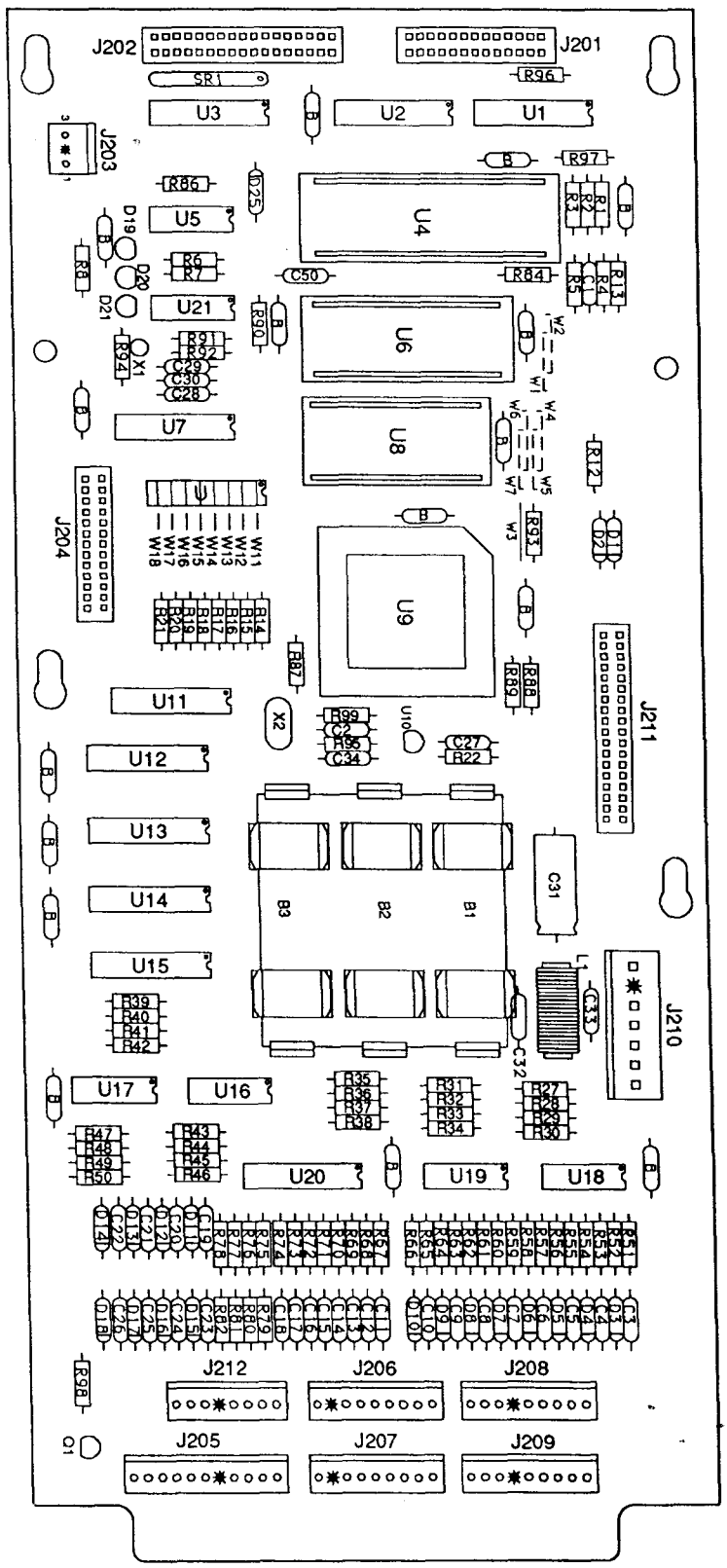


Part No.	Ckt Designator	Description
01-9980		Shield: Wire Protector
20-9229	U1	Thermal Compound
4004-01005-06	U1	Mach. Screw, 4-40 x 3/8
4104-01012-04	U1	Sh. Mach. Screw, #4 x 1/4
4104-01012-04	U1	Sh. Metal Screw, #4 x 1/4
4404-01119-00	U1	Nut, 4-40 SNUT
5010-09324-00	R21	Resistor 27KΩ, 1/4w, 5%
5010-12065-00	R22, R25	Resistor, 120KΩ, 1/4w, 5%
5010-08991-00	R51	Resistor, 4.7KΩ, 1/4w, 5%
5010-08998-00	R36, R37	Resistor, 2.2KΩ, 1/4w, 5%
5010-09034-00	R113, R14, R29-R31, R34, R50, R45-R49	Resistor, 10KΩ, 1/4w, 5%
5010-09035-00	R4	Resistor, 47KΩ, 1/4w, 5%
5010-09036-00	R35	Resistor, 100Ω, 1/4w, 5%
5010-09134-00	R1, R2, R8, R9, R11, R12, R23, R24	Resistor, 150KΩ, 1/4w, 5%
5010-09162-00	R26, R27, R102	Resistor, 100KΩ, 1/4w, 5%
5010-08774-00	R3, R5	Resistor, 22K, 1/4w, 5%
5010-09269-00	R15, R17, R19	Resistor, 12KΩ, 1/4w, 5%
5010-09358-00	R18, R32	Resistor, 1KΩ, 1/4w, 5%
5010-09416-00	R28, R39, R40-R44 R52, R53	Resistor, 470Ω, 1/4w, 5%
5010-09534-00	W3, W5, W7-W10	Resistor, 0Ω
5010-10171-00	R38, R56	Resistor, 56Ω, 1/4w, 5%
5010-10258-00	R16	Resistor,, 1M, 1/4w, 5%
5010-10650-00	R7, R10	Resistor, 62K, 1/4w, 5%
5010-10989-00	R54, R55	Resistor, 470K, 1/4w, 5%
5010-12752-00	R20	Resistor, 1Ω, 1/4w, 5%
5040-08986-00	C3	Capacitor, 100M, 10v (±20%)
5040-09332-00	C15, C18, C34, C36, C38	Capacitor, 47µfd., 25v, Axial
5040-11036-00	C32, C35	Capacitor, 47µfd., 16v, Rad.
5040-12729-00	C24, C25	Capacitor, 4700µfd., 35v
5040-12750-00	C22	Capacitor, 22µfd., 35v, Rad.
5041-09031-00	C26-C29, C37, C46-C48	Capacitor, 1µfd. TANT
5041-09243-00	C20, C21	Capacitor, 10µfd. TANT
5043-08980-00	C41-C44, B(15)	Capacitor, .01M, 50v, (+80, -20)
5043-08996-00	C1, C2	Capacitor, .1µfd., 50v, 10%
5048-11027-00	C8, C10	Capacitor, 33pfd., 50v, 10%
5048-11028-00	C45	Capacitor, 22pfd., 50V, Axial
5048-11029-00	C33	Capacittor, 100pfd., 50v
5048-11030-00	C12	Caapacitor, 470pfd., 50v
5048-11031-00	C19, C31	Capacitor, .001µfd., 50v, 10%
5048-11065-00	C13	Capacitor, .0022µfd., 50v, 10%, Axial
5048-11072-00	C39, C40	Capacitor, .0033µfd.
5048-12036-00	C23	Capacitor, .22µfd., 10v, Ceramic
5048-12745-00	C4, C6	Capacitor, 1800pfd., 50V, 10%
5048-12746-00	C5, C7	Capacitor, 330pfd., 50V
5048-12748-00	C9, C11, C30	Capacitor, 220pfd., 50V
5070-08919-00	D5, D6	Diode, 1N4148
5070-09045-00	D1-D4	Diode MR501, 3.0A.
5250-10495-00	U3	Reg. 7912 1.0A -12v
5281-09215-00	U22	IC, 74LS04 Hex INV
5281-09246-00	U12	IC, 74LS139 2-4 Dec.
5281-09486-00	U28-U30	IC, 74LS374 8 Dual Flipflop
5281-09487-00	U6, U23-U25	IC, 74LS74 Dual Flipflop
5281-09500-00	U31	IC, 74LS32
5281-09745-00	U26, U27	IC, 74LS138 DMLTPX
5281-09850-00	U20	IC, 74LS11 Tripple AND
5281-10577-00	U16	IC, 74LS125 Q/B Bfr
5370-11086-00	U10	IC,, YM2151 Sound
5371-11087-00	U11	IC, YM3012 D/A
5400-10320-00	U13	IC, MPU 68B09E
5284-12651-00	U21	IC 4584
5340-12278-00	U9	S/Ram 2064
5370-09691-00	U17	IC, 55536 CVSD
5370-12260-00	U2	IC, 3340 Elec Atten
5370-12728-00	U1	IC, Audio Amp LM1875
5370-12730-00	U7, U8	IC, Op Amp TL084
5370-12742-00	U32	IC, Op Amp TL082
5371-12727-00	U19	Dac AD7524
5432-12726-00	U5	EE Prom Pot X9503
5460-12423-00	U4	IC, LM7812
5460-12743-00	U33	LM7809 TO-220
5520-09020-00	X1	Crystal, 3.58 MHz.
5521-10931-00	OSC1	Oscillator, 8.0 MHz.
5551-09822-00	L1	Ind, 4.7UH 3.0A.
5700-08985-00	U13	Socket, IC 40-pin, .6"
5700-09004-00	U9, U10	Socket, IC 24-pin, .6"
5700-09006-00	U11	Socket, IC 16-pin, .3"
A-5343-50003-2	U14	IC, Audio ROM
A-5343-50003-3	U15	IC, Audio ROM
A-5343-50003-4	U18	IC, Audio ROM
5700-12088-00		Socket, IC 32-pin (U14, U15, U18)
5705-12755-00	U1	Heatsink 52998-220
5731-08633-00	F501, F502	Fuse, 3A S-B
5733-12060-01		Fuse Holder (F501, F502)
5766-12433-00		PCB-Sound 90
5791-10862-04	J503-J505	Connector, 4-pin Header Sq. .156
5791-10862-05	J502	Connector, 5-pin Header Sq. .156
5791-10862-07	J501	Connector, 7-pin Header Sq. .156
5791-12462-03	J509	Connector, 3-pin Header Sq. .100
5791-12462-04	J507, J508	Connector, 4-pin Header Sq. .100
5791-12516-00	J506	34 Hen 2x17 STR
16-8850-335		PCB Label

A-12742-50003 WPC CPU Board

Item	Part Number	Ckt Designator	Description
1	5010-09034-00	R14-R22, R27-R42, R86, R90, R94, R98	Resistor, 10KΩ, 1/4w, 5%
2	5010-09085-00	R1, R2, R4, R93, R96, R97	Resistor, 1.5KΩ, 1/4w, 5%
3	5010-09314-00	R52, R54, R56, R58, R60, R62, R64, R66, R75-R82	Resistor, 1.2KΩ, 1/4w, 5%
4	5010-09358-00	R3, R43-R51, R53, R55, R57, R59, R61, R63, R65, R67-R74, R84	Resistor, 1KΩ, 1/4w, 5%
5	5010-09416-00	R5-R8, R12, R13, R87-R89	Resistor, 470Ω, 1/4w, 5%
6	5010-09534-00	W2, W4, W7	Resistor, 0Ω
7	5010-10258-00	R95, R99	Resistor, .01µfdΩ, 1/4w, 5%
8	5010-10989-00	R92	Resistor, 470KΩ, 1/4w, 5%
9	5010-12104-00	R91	Resistor, 22µfd, 1/4w, 5%
10	5019-09362-00	SIP 1	SIP, 9R, 10-pin, 4.7KΩ, 5%
11	5040-08986-00	C31	Capacitor, 100µfd, 10v (±20%)
12	5043-08980-00	B	Capacitor, .01µfd, 50v, (+80, -20%)
13	5043-09030-00	C27	Capacitor, 0.047µfd, 50v (±20%)
14	5043-09065-00	C3 - C26	Capacitor, 470pfd, 50v (±20%)
15	5043-09491-00	C2, C29, C30, C34	Capacitor, 22pfd, 1KV, (±10%)
16	5043-09492-00	C28	Capacitor, 100pfd, 50v, (±10%)
17	5043-09845-00	C32, C33	Capacitor, 1KP, 50v, (±20%)
18	5070-08919-00	D2 - D18	Diode, 1N4148, 150MA
19	5070-09266-00	D1, D25	Diode, 1N5817, 1.0A.
20	5160-10269-00	Q1	Transistor, 2N3904, NPN
21	5162-12422-00	U20	IC, ULN, 2803A
22	5281-09308-00	U3	IC, 74LS245, Octal Bus Trncv
23	5281-09486-00	U14	IC, 74LS374, 8D F/F
24	5281-09851-00	U5	IC, 74LS14, SMT/TRG
25	5281-09867-00	U1, U2, U7	IC, Octal Buffer, 74LS244
26	5281-10182-00	U11, U12, U13, U15	IC, 74LS240 Driver
27	5284-12651-00	U21	IC, 4584
28	5340-12278-00	U8	S/RAM 2064
29	5370-12272-00	U16 - U19	IC, LM339, Quad. Comp
30	5370-12687-00	U10	MC, 34064 Reset Chip
31	5520-10438-00	X2	Crystal, 8.0MHz.
32	5520-12084-00	X1	Crystal 32.768 KHz
33	5551-09822-00	L1	ILN, 4.7 UH 3A
34	5671-09019-00	D19 - D21	DSPL LED RED
35	5700-08985-00	U4	Socket, IC 40P, .6"
36	5700-12088-00	U6	Socket, IC 32P, .6"
37	5700-12424-00	U9	Socket, 84 Pin PLCC
38	5764-12431-00		PC Board
39	5791-10850-00	J201, J204	Connector, 26-pin Header Str Sq.
40	5791-10862-07	J210	Connector, 7-pin Header Str Sq.
41	5791-12461-08	J212	Connector, 8-pin Header Str Sq.
42	5791-12461-09	J206 - J209	Connector, 9-pin Header Sq. pin
43	5791-12461-12	J205	Connector, 12-pin Header Sq. pin
44	5791-12516-00	J202, J211	34 Hen 2x17 STR
45	5881-09021-00	B1 - B3	Battery Holder "AA"
46	5048-11033-00	C50	Capacitor, 0.022µf, 10v
47	16-8850-319		PCB Label
48	A-5343-50003-1	U6	Game PROM Assembly
49	5410-12426-00	U9	WPC-89 ASIC
50	5400-10320-00	U4	IC MPU 68B09E
51	5880-09022-00	B1 - B3	Battery, Alkaline, 1.5v ("AA")

A-12742-50003 WPC CPU Board

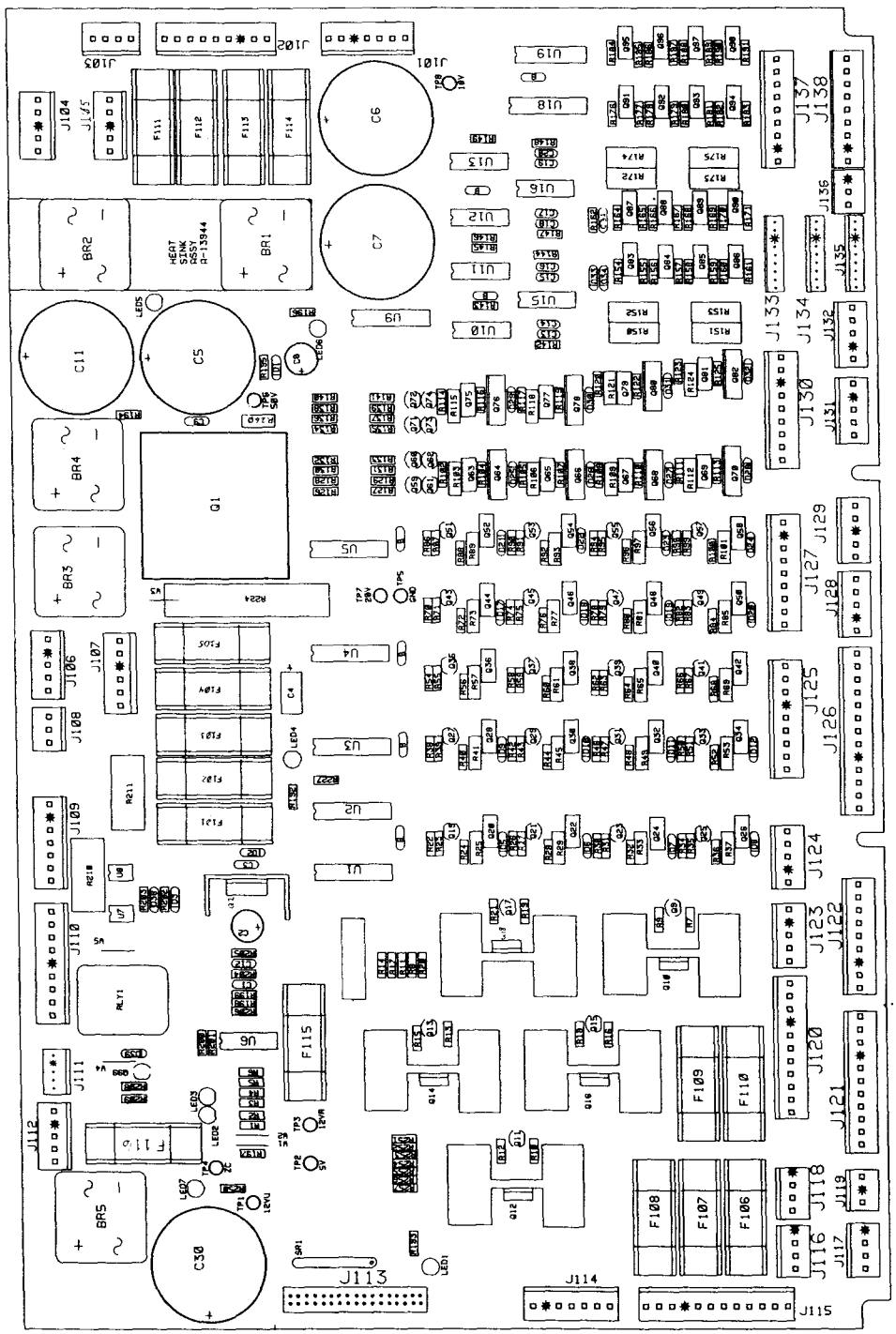


A-12697-1 WPC Power Driver Assembly

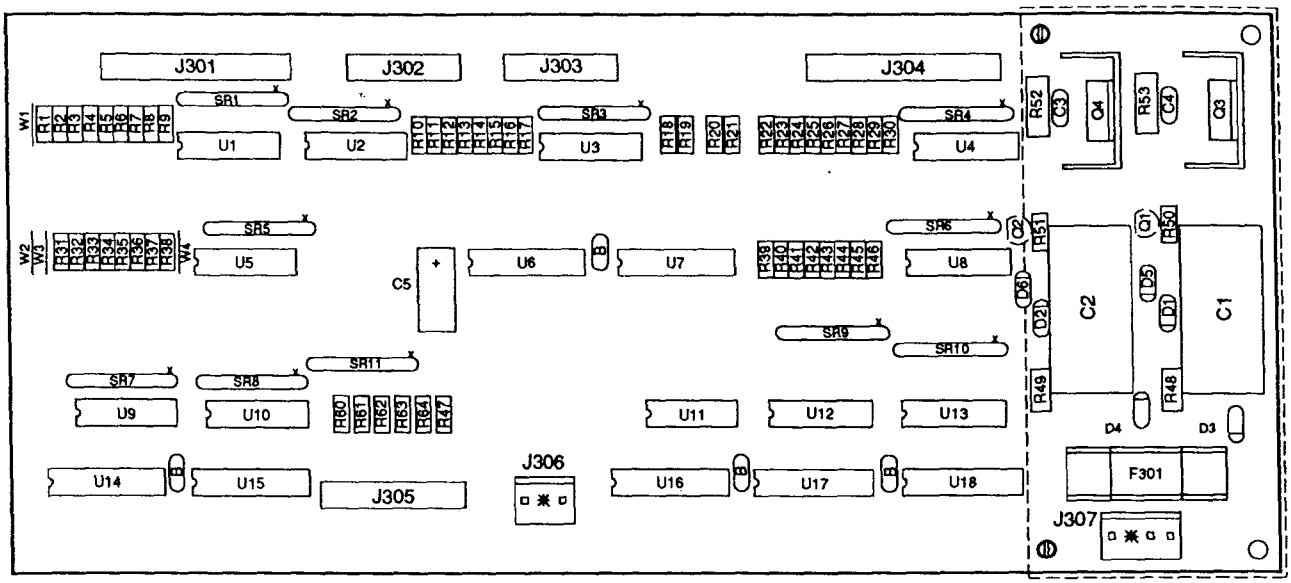
Item	Part Number	Ckt Designator	Description
1	20-9229	Q2, Q10, Q12, Q14, Q16, Q18	Thermal Compound
2	4006-01003-06	Q1, Q2, Q10, Q12, Q14, Q16, Q18	Mach. Screw, 6-32 x 3/8
3	4406-01128-00	Q1, Q2, Q10, Q12, Q14, Q16, Q18	Nut, 6-32 KEPS
4	4004-01005-06	Q10, Q12, Q14, Q16, Q18	Mach. Screw, 4-40 x 3/8
5	4404-01119-00	Q10, Q12, Q14, Q16, Q18	Nut, 4-40 SNUT
6	5010-08981-00	R260	Resistor, 10KΩ, 1/2w, 5%
7	5010-08991-00	R9, R12, R15, R18, R21, R23, R27, R31, R35, R39, R43, R47, R51, R55, R59, R63, R67, R71, R75, R79, R83, R87, R91, R95, R99, R126, R128, R130, R132, R134, R136, R138, R140, R209, R227	Resistor, 4.7KΩ, 14w, 5%
8	5010-08992-00	R8, R11, R14, R17, R20, R177, R179, R181, R183, R185, R187, R189, R191, R208	Resistor, 560Ω, 1/4w, 5%
9	5010-08993-00	R25, R29, R33, R37, R41, R45, R49, R53, R57, R61, R65, R69, R73, R77, R81, R85, R89, R93, R97, R101, R103, R106, R109, R112, R115, R118, R121, R124	Resistor, 68Ω, 1/4w, 5%
10	5010-08997-00	R24, R28, R32, R36, R40, R44, R48, R52, R56, R60, R64, R68, R72, R76, R80, R84, R88, R92, R96, R100, R102, R105, R108, R111, R114, R117, R120, R123, R195	Resistor, 2.7KΩ, 1/4w, 5%
11	5010-08998-00	R155, R157, R159, R161, R165, R167, R169, R171	Resistor, 2.2KΩ, 1/4w, 5%
12	5010-09034-00	R3, R4, R6, R142-R149, R197-R198, R202-R205	Resistor, 10KΩ, 1/4w, 5%
13	5010-09085-00	R194, R196, R251, R253-R257	Resistor, 1.5KΩ, 1/4w, 5%
14	5010-09086-00	R252	Resistor, 6.8KΩ, 1/4w, 5%
15	5010-09224-00	R1, R2, R192, R201	Ressistor, 270Ω, 1/4w, 5%
16	5010-09314-00	R176, R178, R180, R182 R184, R186, R188, R190	Resistor, 1.2KΩ, 1/4w, 5%
17	5010-09324-00	R206	Resistor, 27KΩ, 1/4w, 5%
18	5010-09358-00	R154, R156, R158, R160, R164, R166, R168, R170, R162, R193, R199, R200 R250	Resistor, 1KΩ, 1/4w, 5%
19	5010-09361-00	R104, R107, R110, R113 R116, R119, R122, R125	Resistor, 220Ω, 1/4w, 5%
20	5010-09416-00	R22, R26, R30, R34, R38, R42, R46, R50, R54, R58, R62, R66, R70, R74, R78, R82, R86, R90, R94, R98, R127, R129, R131, R133, R135, R137, R139, R141	Resistor, 470Ω, 1/4w, 5%
21	5010-09534-00	W1, W2	Resistor, 0Ω
22	5010-11079-00	R7, R10, R13, R16, R19	Resistor, 51Ω, 1/4w, 5%
23	5010-12427-00	R150-R153, R172-R175	Resistor, .22Ω, 1w, 5%
24	5010-12632-00	R224	Resistor, .12Ω, 10w, 5%
25	5012-12238-00	R210, R211	Resistor, 3.3KΩ, 5w, 10%
26	5019-10143-00	SR1	SIP, 9R, 10 pin, 470Ω, 5%
27	5040-08986-00	C4	Capacitor, 100µfd, 10v (±20%)
28	5040-09421-00	C2	Capacitor, 100µfd, 25v (+50, -10%)
29	5040-09537-00	C8	Capacitor, 100µfd, 100v (±20%)
30	5040-12313-00	C5, C6, C7, C11, C30	Capacitor, 15,000µfd, 25v (±20%)
31	5043-08980-00	B-BYPASS	Capacitor, .01µfd, 50v (+80, -20%)
32	5043-08996-00	C13-C20, C31	Capacitor, .1µfd, 50v (±20%)
33	5043-09845-00	C1, C12	Capacitor, 1,000pfd, 50v (±20%)
34	5048-10994-00	C3	Capacitor, .33µfd, 50v (±20%) Ax.
35	5070-08919-00	D33, D34	Diode, 1N4148, 150MA.
36	5070-09054-00	D1-D3, D5-D12, D17-D32, D38, D39	Diode, 1N4004, 1.0A.
37	5100-09690-00	BR3-BR5	Bridge Rectifier, 35A., 200v
38	5131-12725-00	Q10, Q12, Q14, Q16, Q18	Triac, BT138E
39	5162-12422-00	U19	IC, ULN 2803
40	5162-12635-00	Q20, Q22, Q24, Q26, Q28 Q30, Q32, Q34, Q36, Q38, Q40, Q42, Q44, Q46, Q48, Q50, Q52, Q54, Q56, Q58, Q63, Q65, Q67, Q69, Q75, Q77, Q79, Q81, Q83 - Q90	Transistor, TIP 102
41	5190-09016-00	Q9, Q11, Q13, Q15, Q17, Q19, Q21, Q23, Q25, Q27, Q29, Q31, Q33, Q35, Q37, Q39, Q41, Q43, Q45, Q47, Q49, Q51, Q53, Q55, Q57, Q59-Q62, Q71-Q74, Q99	Transistor, 2N4403 PNP
42	5191-12179-00	Q64, Q66, Q68, Q70, Q76 Q78, Q80, Q82	Transistor, TIP36C PNP
43	5192-12428-00	Q91-Q98	Transistor, TIP 107
44	5250-12634-00	Q1	Reg LM 323 5v
45	5281-09486-00	U1-U5, U18	IC, 74LS374 8 Dual D Flipflop
46	5281-09487-00	U10-U13	IC, 74LS74 Dual D flipflop
47	5281-10182-00	U9	IC, 74LS240, L/Drvr
48	5370-12272-00	U6, U15, U16	IC, LM339 Quad. Comp
49	5460-12423-00	Q2	IC, LM 7812
50	5490-10892-00	U7, U8	Opto Isolator, 4N25
51	5580-08994-01	RLY 1	Relay 4PDT 6VDC5A VS
52	5671-09019-00	LED1 - LED7	Diaplay LED Red
53	5701-09652-00	Q1	Thermal Pad TO-3
54	5705-09199-00	Q2	Heatsink, #6030B
55	A-13944	Bridge Assembly	WPC Heatsink Rectifier Assy
56	5705-12637-00	Q1	Heatsink 5054
57	5705-12638-00	Q10, Q12, Q14, Q16, Q18	Heatsink 5298B
58	5733-12060-01		Fuse Holder, F101-F116
59	5763-12405-00		Bare PCB
60	5791-10862-03	J108, J119, J136	Connector, 3-pin Header STR Sq.
61	5791-10862-04	J103, J116-J118	Connector, 4-pin Header STR Sq.
62	5791-10862-05	J112, J104-J106, J123, J124, J128, J129, J131, J132	Connector, 5-pin Header STR Sq.
63	5791-10862-06	J107	Connector, 6-pin Header STR Sq.
64	5791-10862-07	J101, J109, J114	Connector, 7-pin Header STR Sq.
65	5791-10862-09	J102, J110, J122, J125, J127, J130, J137, J138	Connector, 9-pin Header STR Sq.
66	5791-10862-11	J120, J121	Connector, 11-pin Header STR Sq.
67	5791-10862-12	J115	Connector, 12-pin Header STR Sq.
68	5791-10862-13	J126	Connector, 13-pin Header STR Sq.
69	5791-12461-05	J111	Connector, 5-pin Header STR Sq.
70	5791-12461-09	J133-J135	Connector, 9-pin Header STR S
71	5791-12516-00	J102	34 HEN 2x17 STR
72	5824-09248-00	TP1-TP8	Test Point #1502-1
73	5041-09163-00	C9	Capacitor, 2.2µfd TANT
74-100	Not Used		
101	16-8850		ID Label
102	5730-09071-00	F114	Fuse, 8A, 32v
103	5731-09128-00	F101, F102	Fuse, S-B, 2.5A., 250v
104	Not Used		
105	5731-09651-00	F106-F113	Fuse, S-B, 5A., 250v
106	Not Used		
107	5731-10356-00	F103-F105, F116	Fuse, S-B, 3A., 250v
108	5730-09797-00	F115	Fuse, S-B, 3/4A., 250v

NOTE: For schematic refer to drawing #16-9057.

A-12697-1 WPC Power Driver Board



A-12739-1 WPC Display Driver Assembly

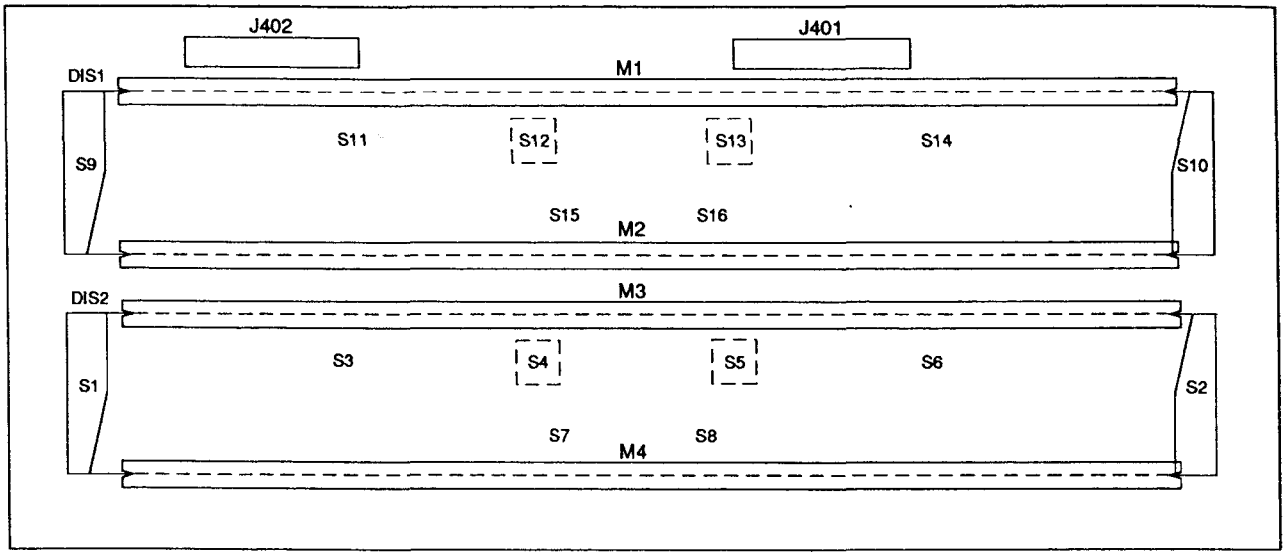


Part Number	Ckt Designator	Description
20-9229	Q3, Q4	Thermal Compound
4006-01003-06	Q3, Q4	Mach. Screw, 6-32 x 3/8
4406-01128-00	Q3, Q4	Nut, 6-32 KEPS
5010-08991-00	R47	Resistor, 4.7KΩ, 1/4w, 5%
5010-09061-00	R50, R51	Resistor, 680Ω, 1/2w, 5%
5010-09069-00	R52, R53	Resistor, 330KΩ, 1/2w, 5%
5010-09085-00	R60- R64	Resistor, 1.5KΩ, 1/4w, 5%
5010-09536-00	R48, R49	Resistor, 39KΩ, 1w, 5%
5010-10258-00	R3, R18 - R21, R24	Resistor, 1MΩ, 1/4w, 5%
5010-08773-00	R4, R5, R25, R26,R33,R38, R41, R46	Resistor, 18KΩ, 1/4w, 5%
5010-09034-00	R6, R27, R31, R34, R36, R39, R42, R44	Resistor, 10KΩ, 1/4w, 5%
5010-09219-00	R1, R2, R7-R9, R22, R23, R28-R30, R32, R35, R37, R40, R43, R45	Resistor, 8.2KΩ, 1/4w, 5%
5010-09534-00	W3, W4	Resistor, 0Ω
5019-10143-00	SR11	SIP, 9R, 10-pin, 470Ω, 5%
5019-12509-00	SR1, SR4-SR10	SIP, 10R, 10-pin, 100KΩ, 5%
5040-08986-00	C51	Capacitor, 100µfd, 10v, (±20%)
5040-12324-00	C1, C2	Capacitor, 150µfd, 160v, (±50%)

Part Number	Ckt Designator	Description
5043-08980-00	B	Capacitor, 0.01µfd, 50v, (+80, -20%)
5043-09072-00	C3, C4	Capacitor, 0.1µfd, 500v, (+80, -20%
5070-09054-00	D3, D4	Diode, 1N4004, 1.0A.
5075-09059-00	D1, D2	Zener, 1N5990, 3.9v, 1/2w
5075-12650-00	D5, D6	Zener, 1N4763A, 91v, 1w
5164-09056-00	Q1	Transistor, MPSD02 NPN
5164-12154-00	Q4	Transistor, MJE15030 NPN
5194-09055-00	Q2	Transistor, MPSD52 PNP
5194-12155-00	Q3	Transistor, MJE15031 PNP
5281-09246-00	U11	IC, 2-4 Dec, 74LS139
5281-09486-00	U14 - U18	IC, Dual D Flipflop, 74LS374
5281-10182-00	U6, U7	IC, 74LS240 L/Driver
5680-08969-00	U9, U10, U12, U13	IC, 7180 Cathode Drive
5680-08968-00	U1, U4, U5, U8	IC, 6184 Anode Drive
5705-09199-00	Q3, Q4	Heatsink, #6030B
5731-12328-00	F301	Fuse, 3/8A., S-B, 250v
5733-12060-01		Fuse Holder, F301
5764-12432-00	PCB	PCB Display Driver
5791-10850-00	J305	Connector, 26-pin STR Sq.
5791-10862-03	J306	Connector, 3-pin STR Sq.
5791-10862-04	J307	Connector, 4-pin STR Sq.
5791-12516-00	J301, J304	34 HEN 2x17 STR
03-8019-2		PCB Support Post
01-9967		Shield

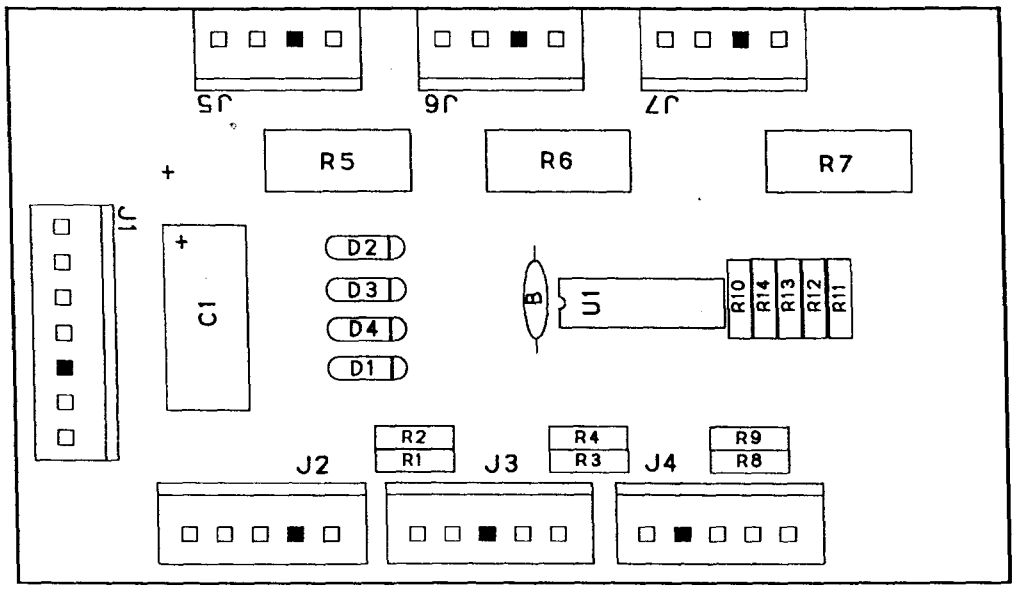
Note: For Schematic refer to drawing #16-9059

A-12793 WPC Dual Assembly



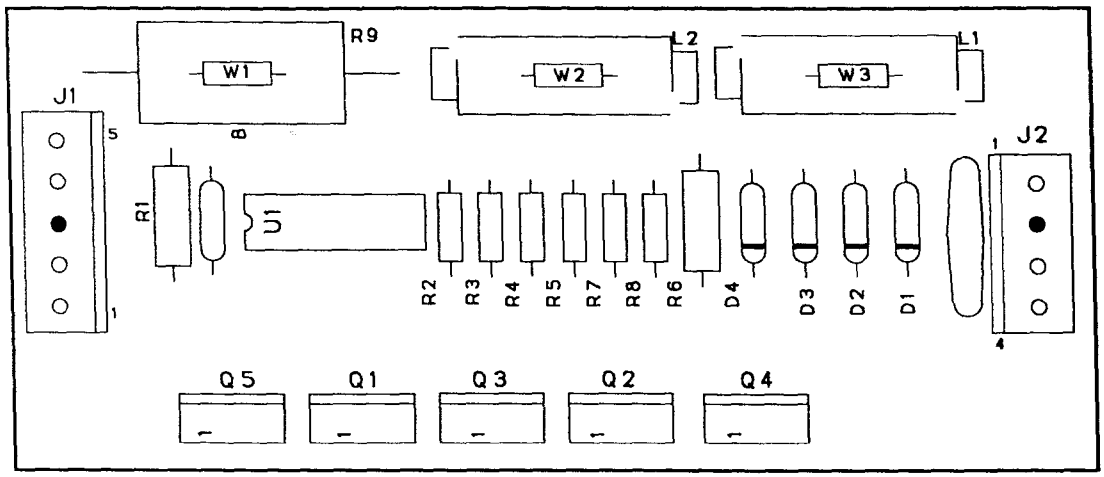
Part Number	Ckt Designator	Description
03-8329	S1, S2, S9, S10	Support 3/8"
03-8088-1	S4, S5, S12, S13	Retainer
5760-12448-00	PCB	Bare PCB
5670-12308-00	DIS1, DIS2	Alphanumeric Display Board
5791-12516-00	J401, J402	Connector, 34 Hen 2x17 STR
23-6655	M1-M4	Mask WPC Display

A-13901 Opto Ramp Switch Assembly



Part Number	Ckt Designator	Description
5010-08774-00	R10, R13	Resistor, 22KΩ, 1/4w, 5%
5010-09034-00	R14	Resistor, 10KΩ, 1/4w, 5%
5010-09162-00	R11, R12	Resistor, 100KΩ, 1/4w, 5%
5010-09999-00	R1-R4, R8, R9	Resistor, 2KΩ, 1/4w, 5%
5010-12733-00	R5 - R7	Resistor, 220Ω,1w, 5%
5040-12298-00	C1	Capacitor, 100M, 25v, (+50, -10%)
5043-08980-00	B	Capacitor, .01M, 50v, (+80, -20%)
5070-09054-00	D1 - D4	Diode, 1N4004, 1.0A.
5370-12272-00	U1	IC, LM339, Quad. Comp
5768-12686-00		Bare PC Board
5791-12273-05	J2	Connector, 5-pin Header
5791-12273-07	J1	Connector, 7-pin Header
5791-12273-04	J5	Connector, 4-pin Header

C-13963 High Driver Board



Part Number	Ckt Symbol	Description
5010-08930-00	R1, R6	Resistor, 470Ω, 1/2w, 5%
5010-09034-00	R4, R5	Resistor, 10KΩ, 1/4w, 5%
5010-09314-00	R2, R3, R7 R8	Resistor, 1.2KΩ, 1/4w, 5%
5012-10024-00	R9	Resistor, 5.6KΩ, 5w, 10%
5043-08980-00	B	Capacitor, .01M, 50v, (+80, -20%)
5043-08996-00	C1	Capacitor, .1M, 50v, (±20%)
5070-09054-00	D1 - D4	Diode, 1N4004, 1.0A.
5162-12635-00	Q1, Q3	Transistor, TIP 102
5192-12428-00	Q2, Q4, Q5	Transistor, TIP 107
5370-12272-00	U1	IC LM339 Quad. Comp.
5551-09822-00	L1, L2	IND, 4.7 UH 3A.
5768-12701-00		Bare PC Board
5791-12273-04	J2	Connector, 4-pin Sq Hdr
5791-12273-05	J1	Connector, 5-pin Sq Hdr

Lamp Boards

B-12224 Single Lamp Board

Part Number	Description
5768-12312-00	Lamp PCB
24-8767	Twist Lamp Socket
24-8768	Bulb #555, (6.3v, 0.25A.)
5070-09054-00	Diode, 1N4004, 1.0A.

C-14086 Lamp Board ("6-C")

Part Number	Description
5768-12714-00	Lamp PCB
24-8767	Twist Lamp Socket
24-8768	Bulb #555, (6.3v, 0.25A.)
5070-09054-00	Diode, 1N4004, 1.0A.
5791-10871-08	Connector, 8-pin Header Sq Post

A-14094 Clock Lamp Board

Part Number	Description
5768-12715-00	Lamp PCB
24-8767	Twist Lamp Socket
24-8768	Bulb #555, (6.3v, 0.25A.)
5070-09054-00	Diode, 1N4004, 1.0A.
5791-10871-12	Connector, 12-pin Header Sq Post
5010-09534-00	Resistor, 0Ω

C-13375 Clock Single Lp Board

Part Number	Description
5768-12592-00	Lamp PCB
24-8803	Lamp Socket
24-8802	Bulb #906, (13v, 0.69A.)
5791-10871-02	Connector, 2-pin Header Sq Post

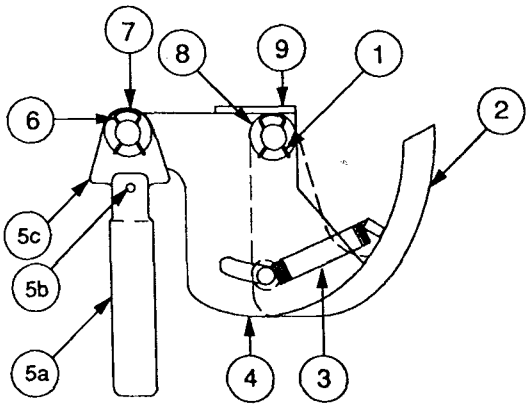
A-14115 Bill Board

Part Number	Description
5768-12719-00	Lamp PCB
24-8804	Socket V-Wedge PCB
24-8768	Bulb #555, (6.3v, 0.25A.)
5070-09054-00	Diode, 1N4004, 1.0A.
5791-10871-08	Connector, 8-pin Header Sq Post

A-14280 10-Lamp Board

Part Number	Description
5768-12754-00	Lamp PCB
24-8767	Twist Lamp Socket
24-8768	Bulb #555, (6.3v, 0.25A.)
5070-09054-00	Diode, 1N4004, 1.0A.
5791-10871-05	Connector, 5-pin Header Sq Post
5010-09534-00	Resistor, 0Ω

C-9638 Ball Shooter Lane Feeder

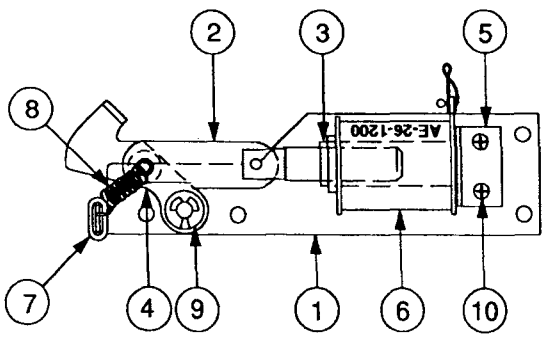


Item	Part Number	Description
1	12-6227	Hair Pin Clip
2	A-8247	Eject Cam Assembly
3	10-362	Ejector Spring (Plain)
4	A-6949-L	Spring Plate Assembly
5	A-8050-1	Coil Plunger Assy, 2-1/8"
a)	02-3407-2	Coil Plunger, 2-1/8"
b)	20-8716-5	Roll Pin, 1/8 x 7/16
c)	03-8085	Armature Link
6	12-6227	Hair Pin Clip
7	4700-00030-00	Flatwasher, 17/64 x1/2 x 15ga.
8	4700-00103-00	Flatwasher, 17/64 x1/2 x 28ga.
9	A-8268	Mounting Bracket Assembly

Associated Parts

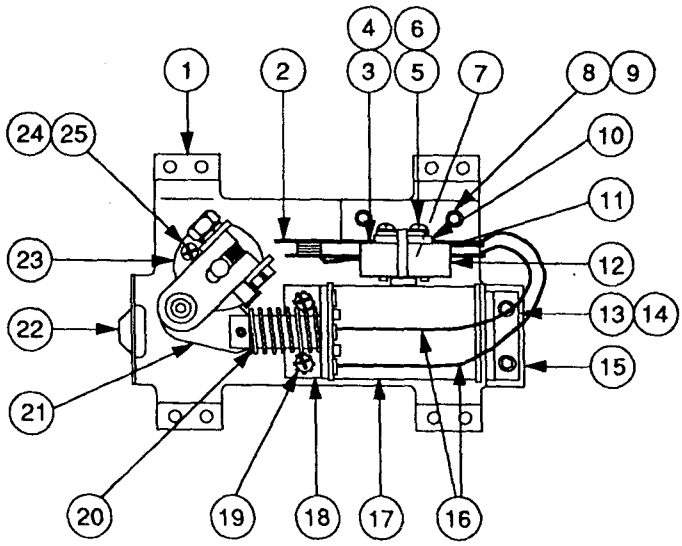
B-9362-R-3	Coil & Bracket Assembly
B-7572-1	Bracket & Stop Assembly
01-8-508-S	Coil Retaining Bracket
4006-01017-06	Mach. Screw, 6-32 x 3/8
4406-01119-00	Nut, 6-32 ESN
AE-26-1200	Coil Assembly
03-7066	Coil Tubing

A-8039-3 Outhole Kicker Assembly



Item	Part Number	Description
1	A-6378	Mounting Plate Assembly
2	A-8335	Coil Plunger Assembly
a)	02-2364	Coil Plunger
b)	20-8716-5	Roll Pin, 1/8 x 7/16
c)	01-4251	Ball Return Link
3	03-7066	Coil Tubing
4	A-6889	Kicker Lever Assembly
5	A-8038	Coil Stop Assembly
6	AE-26-1200	Coil Assembly
7	03-7176-1	Striker Ring
8	10-101-4	Spring-Reset
9	20-8712-25	"E" Ring, 1/4" Shaft
10	4006-01003-03	Mach. Screw, 6-32 x 3/16

C-13174-R Right Flipper Assembly

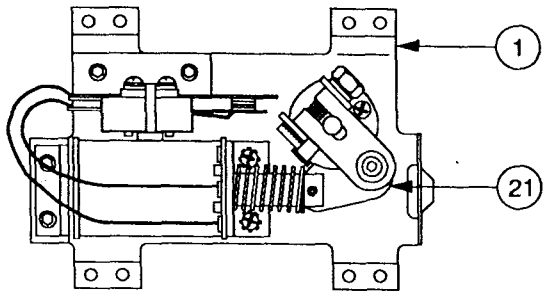


Item	Part Number	Description
1	B-13104-R	Flipper Base Assy, R.
2	03-7811	End of Stroke (EOS) Sw
3	RM-21-06	Sleeve, Vinyl (Cap. leads)
4	5045-12098-00	Capacitor, 2.2 µFd, 250V, 20%
5	4701-00002-00	Lockwasher, #6 Split
6	4105-01019-10	Sh. Metal Screw,#5 x 5/8
7	23-6622	Tape, Double-sided
8	4008-01079-05	Cap Screw, 8-32 x 5/16
9	4701-00003-00	Lockwasher, #8 Split
10	01-9375	Switch Mounting Bracket
11	03-7520-2	Ty-Wrap, Nylon
12	20-6516	Speednut, Tinnerman
13	4010-01066-06	Cap Screw, 10-32 x 3/8, SH
14	4701-00004-00	Lockwasher, #10 Split
15	A-12111	Flipper Stop Assembly
16	HW-30018-6	Wire, 18 AWG, Blue
17	FL-11630	Flipper Coil (Red)
18	01-7695	Solenoid Bracket
19	4006-01017-04	Mach. Screw, 6-32 x 1/4
20	10-376	Coil Plunger Spring
21	B-10655-R	Crank Link Assembly, Right
a)	02-4179	Link Spacer Bushing
b)	4010-01086-14	Cap Screw, 10-32 x 7/8, SH
c)	4700-00023-00	Flatwasher, 5/8 x 13/64 x 16ga.
d)	4701-00004-00	Lockwasher, #10 Split
e)	4410-01132-00	Nut, 10-32 ESNA
f)	A-10656*	Flipper Link Assembly
1.)	02-4219	Coil Plunger
2.)	20-9370-1	Spring Pin, 5/32 dia. x 7/16
3.)	03-8050-1	Flipper Link
g)	B-10657-R	Flipper Crank Assy, R.
1.)	01-8073-R	Flipper Crank, R.
2.)	17-1037	Crank Washer
3.)	4010-01066-18	Cap Screw,10-32 x 1-1/8
4.)	4410-01127-00	Nut, 10-32 Hex Hd.
5.)	4700-00107-00	Flatwasher, 5/8 x 13/64 x 12ga.
6.)	4701-00004-00	Lockwasher, #10 Split
7.)	RM-23-06	Tubing, H. S. 1/4 DWP
22	23-6577	Bumper Plug
23	03-7568	Flipper Bushing
24	4006-01005-06	Mach. Screw, 6-32 x 3/8
25	4406-01117-00	Nut, 6-32 Hex.

Associated Parts:.

20-9250-6	Flipper Arm on Shaft (Yellow)
23-6519-4	Red Rubber Ring (Red)

Left Flipper Assembly



C-13174-L
Left Flipper Assembly

(Parts listed replace same items of **C-13174-R**)

Item	Part Number	Description
1	B-13104-L	Flipper Base Assembly, L
21	B-10655-L	Crank Link Assembly, L
g)	B-10657-L	Flipper Crank Assembly
1.)	01-8073-L	Flipper Crank, Left

C-13174-L-1
Upper Left Flipper Assembly

(Parts listed replace same items of **C-13174-R**)

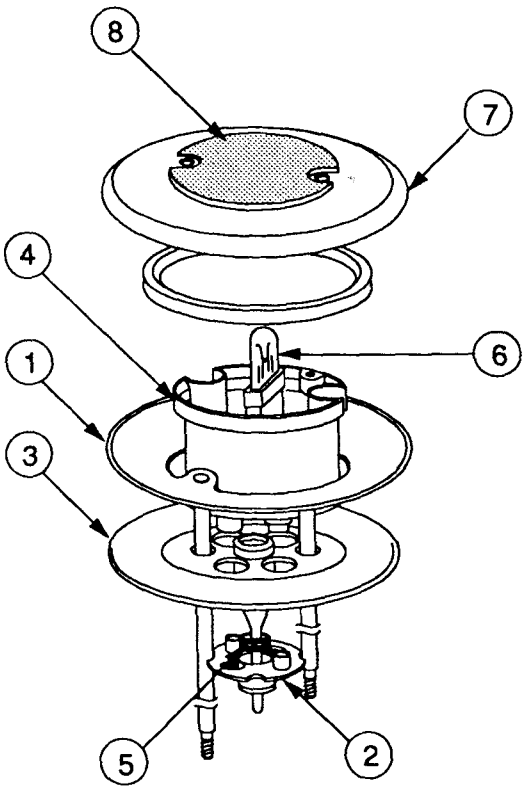
Item	Part Number	Description
1	B-13104-L	Flipper Base Assembly, L
17	FL-11753	Flipper Coil (Yellow)
21	B-10655-L	Crank Link Assembly, L
g)	B-10657-L	Flipper Crank Assembly
1.)	01-8073-L	Flipper Crank, Left

Associated Parts:.	20-9250-6	Flipper Arm on Shaft (Yellow)
	23-6519-4	Red Rubber Ring (Red)

Flipper Assembly Notes...

1. Each Flipper Assembly on the Lower Playfield is mounted beneath the playfield, in conjunction with the plastic Flipper Paddle and Shaft (20-9250-6) and Flipper Rubber (23-6519-4) on the upper side of the playfield.
2. The tip of the EOS Switch must travel 0.150 (+ .010, - .000) inch, before the contacts fully open, with the flipper in the actuated position. The EOS Switch contacts must have a gap of 0.062 (± .015) inch. Adjustment of the EOS Switch must be made at a minimum distance of 0.25 inch from the switch body.
3. All moving elements of the assembly must operate freely, with no evidence of binding.
4. The large end of the Coil Plunger Spring (item 20) must fit within the four lugs of the Solenoid Bracket.
5. For coil replacement, remove the Solenoid Bracket (item 18) to prevent screw damage.
6. Use Loctite™ 242 when reattaching screws to the Flipper Stop Assembly, the Solenoid Bracket, and the Flipper Bushing.
7. When replacing their Bumper Plug (item 22) to restore proper flipper operation, readjust the flipper paddle and shaft position.
8. Solid-color blue wire connects to the banded end of each diode, mounted on the connector end of the Flipper Coil (item 17). Trace-color wire connects to the unbanded end of the diode.

Jet Bumper Assemblies



B-9414
White Jet Bumper Assembly

Item	Part Number	Description
1	A-4754	Bumper Ring Assembly
2	03-6009-A5	Bumper Base - White
3	03-6035-5	Bumper Wafer - White
4	03-7443-5	Bumper Body - White
5	10-7	Spring - Jet Bumper
6	A-11199	Socket & Bulb
Associated Parts:		
7	03-8254-13	Jet Bumper Cap - Clear
8	31-2-50003-1	Jet Cap Decal

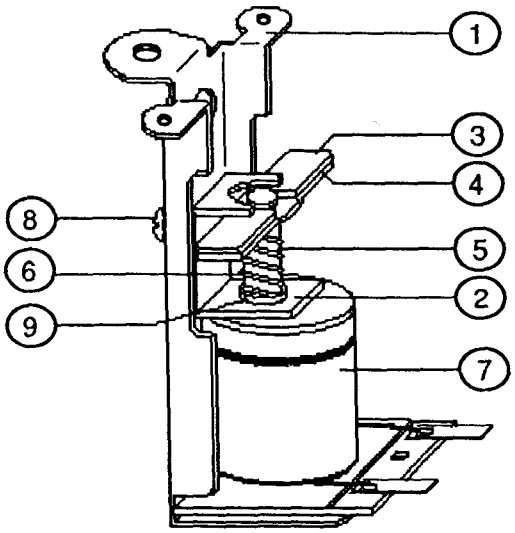
B-9414-1
Blue Jet Bumper Assembly

Item	Part Number	Description
1	A-4754	Bumper Ring Assembly
2	03-6009-A5	Bumper Base - White
3	03-6035-1	Bumper Wafer - Blue
4	03-7443-5	Bumper Body - White
5	10-7	Spring - Jet Bumper
6	A-11199	Socket & Bulb
Associated Parts:		
7	03-8254-10	Jet Bumper Cap - Blue
8	31-2-50003-1	Jet Cap Decal

B-9414-3
Red Jet Bumper Assembly

Item	Part Number	Description
1	A-4754	Bumper Ring Assembly
2	03-6009-A5	Bumper Base - White
3	03-6035-4	Bumper Wafer - Red
4	03-7443-5	Bumper Body - White
5	10-7	Spring - Jet Bumper
6	A-11199	Socket & Bulb
Associated Parts:		
7	03-8254-9	Jet Bumper Cap - Red
8	31-2-50003-1	Jet Cap Decal

A-9415-2 Jet Bumper Coil Assembly

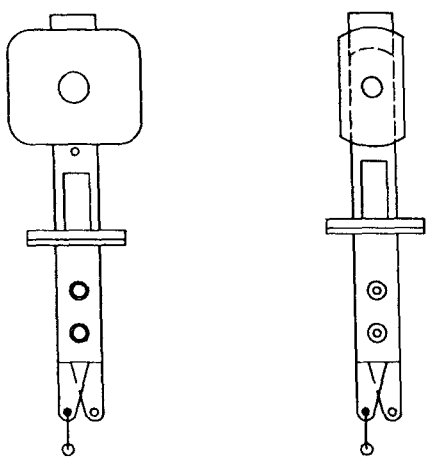


Item	Part Number	Description
1	B-7417	Bracket & Stop Assembly
2	01-1747	Coil Retaining Bracket
3	01-5492	Armature Link, Steel
4	01-5493	Armature Link, Bakelite
5	02-3406-1	Coil Plunger
6	10-326	Armature Spring
7	AE-26-1200	Coil Assembly
8	4006-01017-04	Mach. Screw, 6-32 x 1/4
9	03-7066	Coil Tubing

Associated Parts

B-12030-2	Jet Bumper Sw & Diode Assy
B-12029-2	Jet Bumper Sw & Brkt. Assy
SW-11A-37	Jet Bumper Switch Assy
5070-06258-00	Diode, 1N4001, 1.0A.

Standup Target Assemblies



B-12001- B-12583-1

B-12001-1
Square Standup Target

Part Number	Description
SW-1A-174-1	Standup Tgt. Switch
03-7264-1	Square Target, Blue
5070-06258-00	Diode, 1N40001, 1.0A.

B-12001-4
Square Standup Target

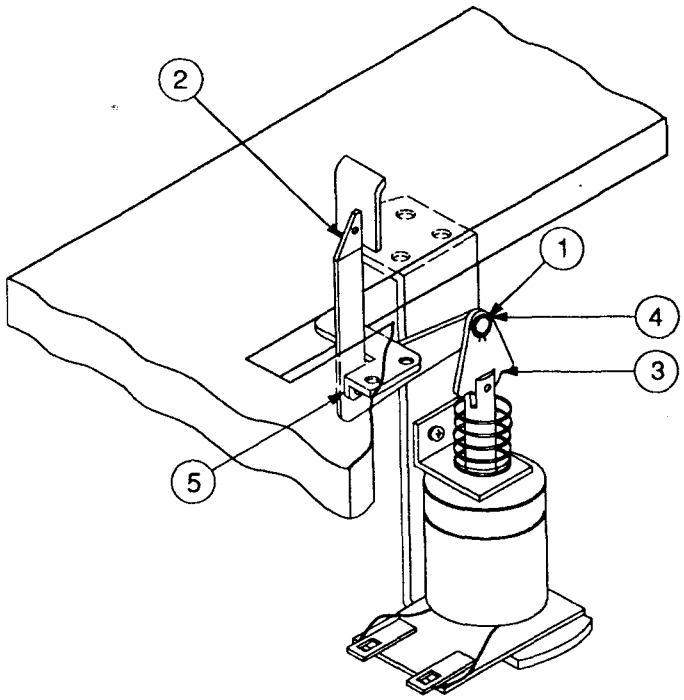
Part Number	Description
SW-1A-174-4	Standup Tgt. Switch
03-7264-4	Square Target, Red
5070-06258-00	Diode, 1N40001, 1.0A.

B-12583-1
Standup Target

Part Number	Description
SW-1A-178-1	Standup Tgt. Switch
03-8225-1	Square Target, Blue
5070-06258-00	Diode, 1N40001, 1.0A.

B-12665 Kicker Arm (Slingshot) Assembly

(Left & Right Kickers)



Item	Part Number	Description
1	12-6227	Clip, Hairpin
2	A-12664	Kicker Crank Assembly
3	A-5103	Coil Plunger Assembly
a)	02-2364	Coil Plunger
b)	20-8716-5	Roll Pin, 1/8 x 7/16
c)	03-8085	Armature Link
4	4700-00030-00	Flatwasher, 17/64 x 1/2 x 15ga.
5	A-5653	Mounting Bracket Assembly

Associated Parts for Left Kicker

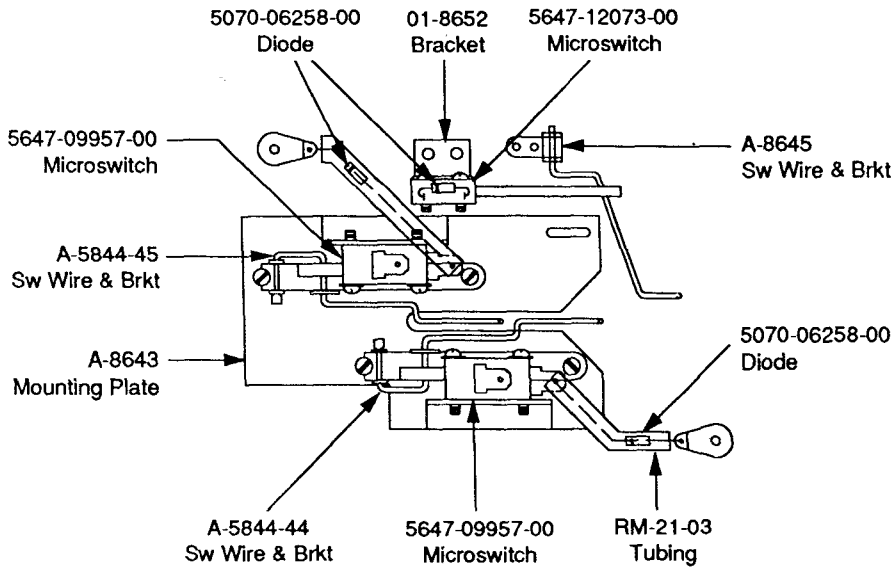
B-9362-R-1	Coil & Bracket Assembly
B-7572-1	Bracket & Stop Assembly
01-8-508-S	Coil Retaining Bracket
4006-01017-06	Mach. Screw, 6-32 x 3/8
4406-01119-00	Nut, 6-32 ESN
AE-26-1200	Coil Assembly
03-7066	Coil Tubing

Associated Parts for Right Kicker

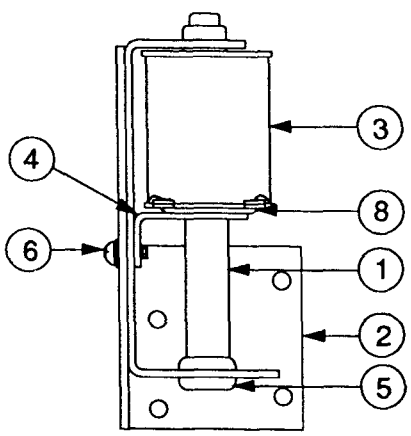
B-9362-L-1	Coil & Bracket Assembly
B-7572-1	Bracket & Stop Assembly
01-8-508-S	Coil Retaining Bracket
4006-01017-06	Mach. Screw, 6-32 x 3/8
4406-01119-00	Nut, 6-32 ESN
AE-26-1200	Coil Assembly
03-7066	Coil Tubing

Ball Trough Switches

(Viewed from underside of playfield to show locations)

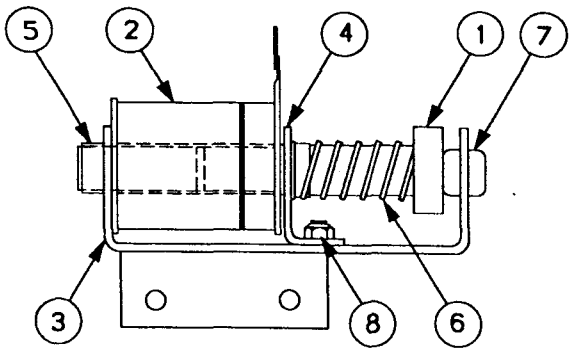


B-10686-1 Knocker Assembly



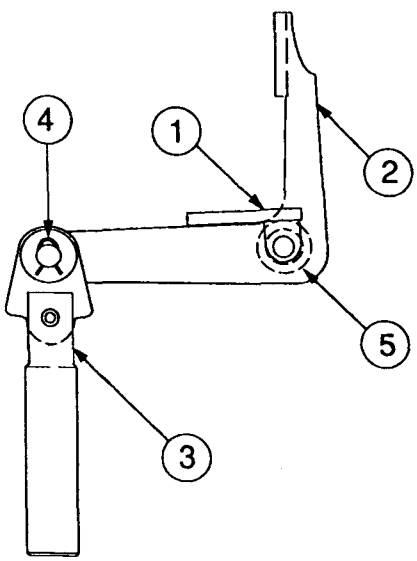
Item	Part Number	Description
1	A-5387	Coil Plunger Assembly
a)	02-2653	Coil Plunger
b)	03-6013	Bell Arm Ext.
2	B-7409-2	Mtg. Bracket Assembly
3	AE-23-800	Coil Sub-Assembly
4	01-8-508-T	Coil Retaining Bracket
5	23-6420	Rubber Grommet
6	4008-01017-06	Mach. Screw, 8/32 x 3/8
7	H-11835	Knocker Cable
8	03-7067-5	Coil Tubing

A-14107 Kicker Assembly



Item	Part No.	Description
1	A-13270	Bell Armature Assembly
2	AE-26-1200	Coil Sub-Assembly
3	A-14106	Bracket Assembly
4	01-9423	Coil Bracket
5	03-7067	Coil Tubing
6	10-135	Coil Spring Plunger
7	23-6420	Rubber Grommet
8	4408-01119-00	Nut, 8-32 ESN

A-14143 Kickbig Assembly

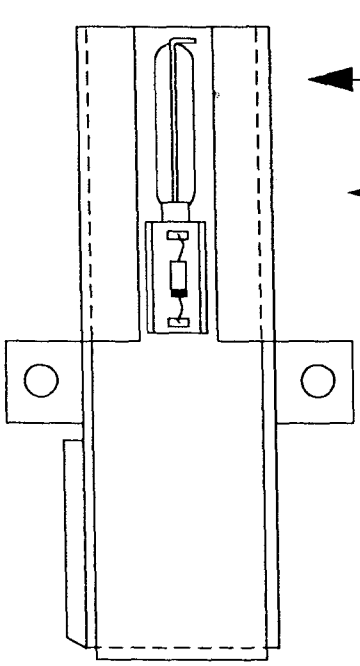


Item	Part No.	Description
1	A-11396	Kicker Mtg. Bracket Assy
2	A-5652-1	Kicker Crank Assembly - Right
a)	A-8769	Kicker Crank Sub-Assembly
b)	02-2089	Pin Cam
3	A-8050-1	Plunger Assembly, 2-1/8"
a)	002-3407-2	Plunger Coil, 2-1/8"
b)	03-8085	Armature Link
c)	20-8716-5	Roll Pin, 1/8 x 7/16
4	12-6227	Hairpin Clip
5	4700-00030-00	Flatwasher, 17/64 x 1/2

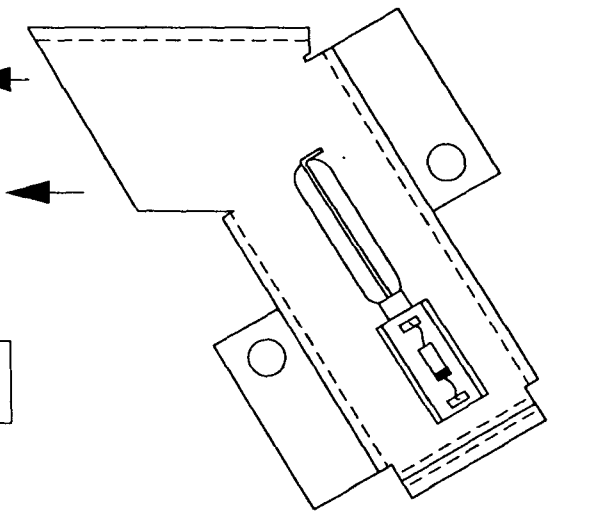
Associated Parts

B-13935	Coil & Bracket Assembly
B-7572-1	Bracket & Stop Assembly
01-8-508-S	Coil Retaining Bracket
4006-01017-06	Mach. Screw, 6-32 x 3/8
4406-01119-00	Nut, 6-32 ESN
AE-26-1500	Coil Assembly

Loop & Drain Assembly



A-13993
LOOP ASSEMBLY



A-14190
DRAIN ASSEMBLY

A-13993
Loop Assembly

Item	Part No.	Description
1	A-13994	Loop Weld Assembly
a)	01-9490	Switch Mounting Bracket
b)	01-9816	Loop
c)	01-9817	Left Guide Loop
d)	01-9818	Right Guide Loop
2	01-8240	Nut Plate, #2-56
3	4002-01005-08	Mach. Screw, 2-56 x 1/2
4	4701-00024-00	Lockwasher, #2 Split
5	5070-06258-00	Diode, 1N40001, 1.0A.
6	5647-12073-25	Microswitch

A-14190
Drain Assembly

Item	Part No.	Description
1	A-13995	Drain Weld Assembly
a)	01-9490	Switch Mounting Bracket
b)	01-9821	Drain
2	01-8240	Nut Plate, #2-56
3	4002-01005-08	Mach. Screw, 2-56 x 1/2
4	4701-00024-00	Lockwasher, #2 Split
5	5070-06258-00	Diode 1N4001, 1.0A.
6	5647-12073-25	Microswitch

A-13718 Head Assembly

Item	Part Number	Description
1	A-13734	Bracket, Head Sub-Assembly
	01-9674	Bracket
	02-4454	Plunger Stop (2)
	02-4457	Shading Ring (2)
	02-4459	Jaw Pivot (2)
	02-4460	Crank Pivot
	20-9670	Standoff 6/32 x 3/16 (4)
2	A-13735	Coil Bracket Assembly (3)
	01-9677	Coil Mounting Bracket
	20-9496	Pem Nut 6-32 (2 each)
3	A-14026	Centering Bracket Assembly
	01-9838	Centering Bracket
	20-9496	Pem Nut 6-32 (2)
4	A-14027	Eye Bracket Assembly
	01-9676	Eye Bracket
	20-9496	Pem Nut 6-32 (3)
5	A-14028	Plunger Assembly
	02-4492	Lid Latch Plunger
	03-8480	Plunger Extension
	20-8716-16	Roll Pin 1/16 x 5/16
6	A-14029	Stop Bracket Assembly
	01-9839	Stop Bracket
	02-4454	Plunger Stop
	02-4457	Shading Ring
	20-9496	Pem Nut 6-32 (2)
7	A-14030	Main Lid Plunger Assembly
	02-4491	Main Lid Plunger
	02-4500	Extension Plunger
	03-8479	Eye Lid Link
	20-8716-1	Roll Pin 3/32 x 1/2

Hardware:

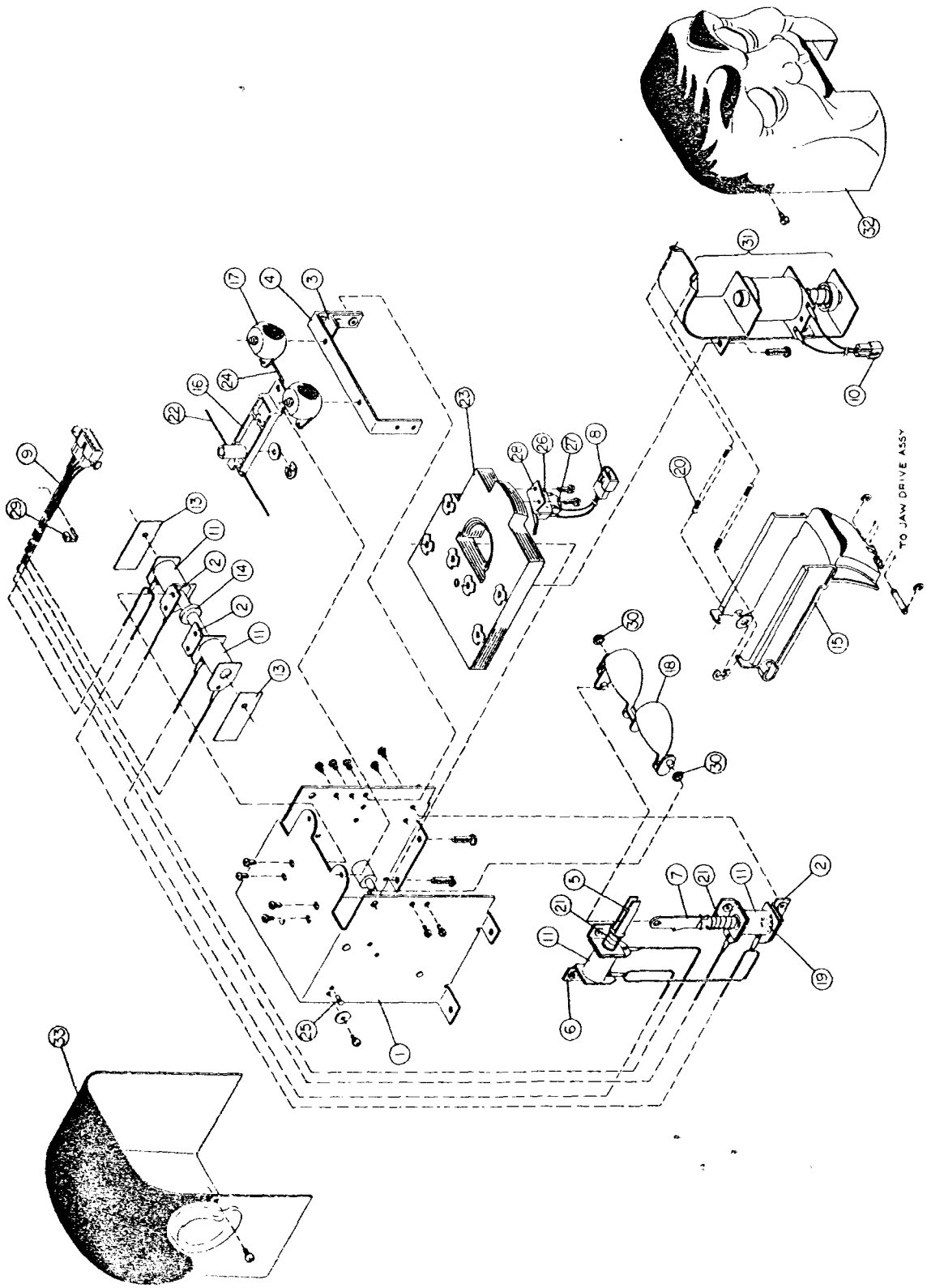
4008-01015-04B	MS 8-32 x 1/4 P-PH-TT
4006-01017-06	MS 6-32 x 5/16 P-PH-S (19)
4408-01118-00	Nut 8-32 Tee 3/8 Long (5)
4700-00021-00	FW .203 x .437 x .032 (2)
20-8712-25	"E" Ring 1/4" Shaft (2)
4700-00072-00	FW .265 x .500 x .032 (2)

Item	Part Number	Description
8	H-14252-2	Ramp Switch Cable
9	H-14252-3	Rudy Eye Cable
10	H-14252-4	Rudy Kicker Cable
11	SM-30-1100-DC	Coil Assembly (4)
12	01-9676	Eye Bracket
13	01-9959	Insulator (2)
14	02-4455	Plunger
15	03-8424	Mandible
16	03-8428	Crank
17	03-8468	Eye (2)
18	03-8469	Eye Lids
19	03-8486	Centering Flange
20	10-423	Extension Spring (2)
21	10-424	Compression Spring (2)
22	10-425	Spring Bar
23	11-975	Wood Head Base
24	12-6928	Wire Eye Link (2)
25	20-9668	Eyelet 1/8 x 1/4 (2)
26	5647-12073-43	Mini Micro Switch
27	5070-06258-00	Diode, 1N4001 1.0A
28	01-9785	Switch Mounting Bracket
29	03-7520-2	Tie Wrap
30	20-8790-1	Nyliner (2)

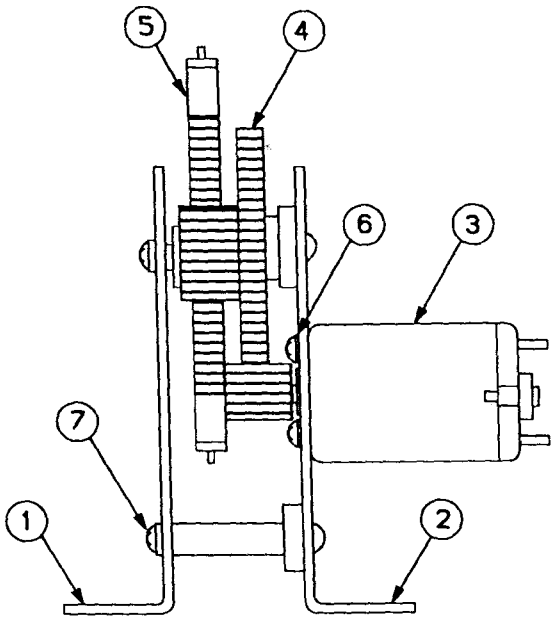
Related Assemblies:

31	A-13941	Ball Eject Assembly
	A-13270	Bell Armature Assembly
	A-11334	Ball Popper Arm Sub-Assy.
	02-2963	Bell Arm Stop
	02-4279	Armature
	03-8362	Armature Extension
	20-8716-20	Roll Pin 1/8 x 3/8
	A-13942	Bracket Assembly
	AE-26-1500	Coil Assembly
	01-9784	Coil Mounting Bracket
	03-7067	Coil Tubing
	10-135	Coil Plunger Spring
	23-6420	Rubber Grommet
	4408-01119-00	Nut 8-32 ESN
32	31-1588-50003-1	Screened Plastic Face
33	31-1588-50003-2	Screened Plastic Head Back

A-13718 Head Assembly

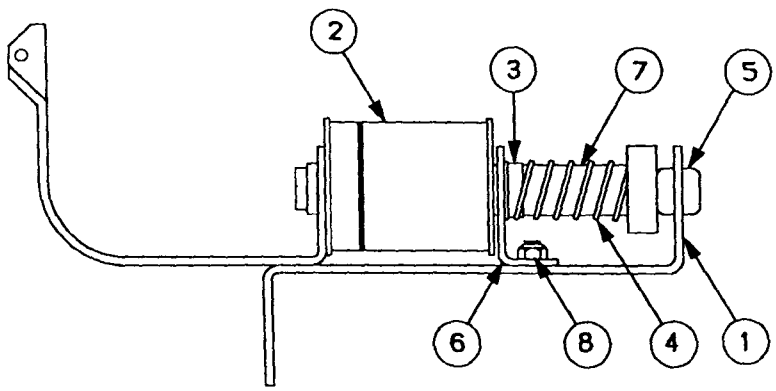


A-13752 Jaw Drive Assembly



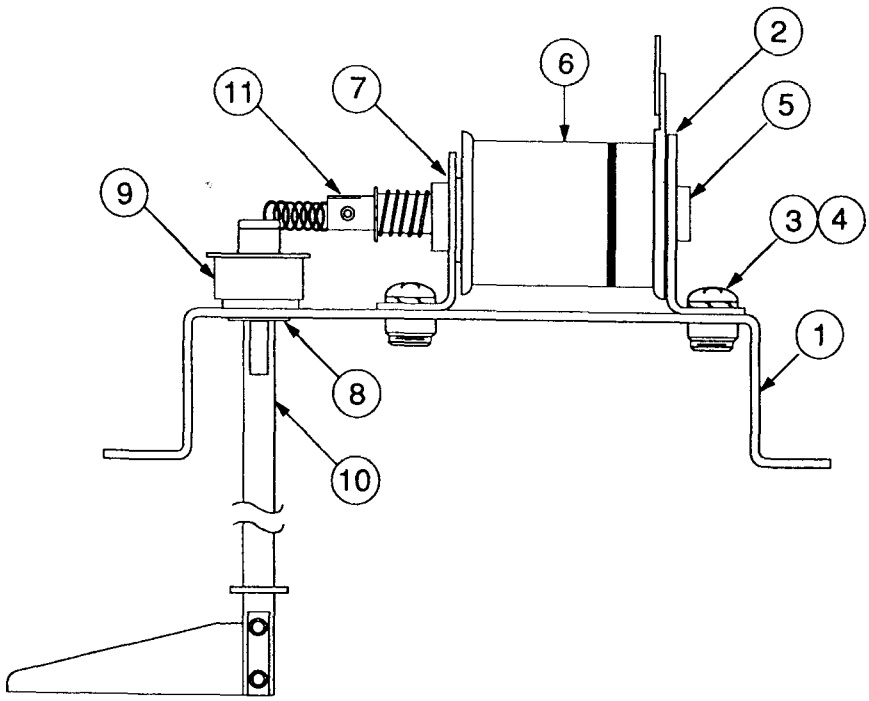
Item	Part No.	Description
1	01-9686-L	Bracket Jaw Drive Assy.
2	A-13751	Bracket Assembly
3	A-13997	Jaw Motor Assembly
4	03-8471	Gear
5	03-8470	Sector
6	4004-01003-03	Mach. Screw, #4-40 x 3/16
7	4008-01017-06	Mach. Screw, #8-32 x 3/8

A-13941 Eject Assembly



Item	Part Number	Description
1	A-13942	Bracket Assembly
2	AE-26-1500	Coil Assembly
3	03-7067	Coil Tubing
4	10-135	Solenoid Spring
5	23-6420	Rubber Grommet
6	01-9784	Coil Bracket
7	A-13270	Bell Armature Assy.
8	4408-01119-00	Nut, #8-32 ESN

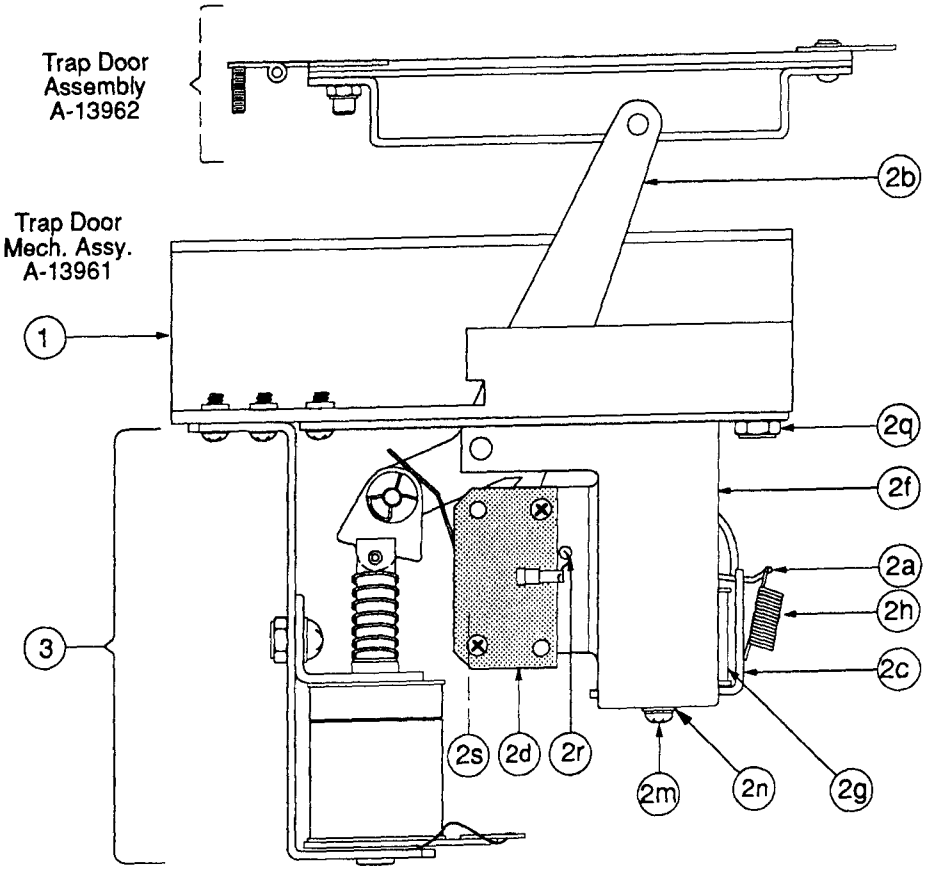
A-14147 Diverter Assembly



Item	Part Number	Description
1	A-14146	Diverter Bracket Assy.
2	01-8413	Coil Mounting Bracket
3	4701-00004-00	Lockwasher, #10 Split
4	4010-01008-06	Mach. Screw, 10-32 x 3/8
5	03-7066	Coil Tubing
6	AE-26-1200	Coil Assembly
7	A-10821	Flipper Stop Bracket Assy.
8	20-8790	Nylined Bearing

Associated Parts

Item	Part Number	Description
9	A-14185	Drive Arm Assembly
a)	01-8456	Bracket
b)	02-4504	Bushing Drive Hub
10	A-14163	Shaft Assembly
a)	02-4503	Shaft
b)	01-9908	Ball Guide
c)	20-8712-25	"E"-Ring Retainer
d)	07-6688-20	Rivet, 1/4" Lg.
11	A-13278	Plunger Assembly



A-13961
Trap Door Mechanism Assembly

Item	Part Number	Description
1	A-14140	Extension Bracket & Pem/Nut Assy.
2	A-14161	Lift Assembly
a)	A-11139	Armature Assembly
b)	A-14160	Lift Crank Assembly
c)	A-6892	Frame & Eyelet Assembly
d)	A-7438-1	Terminal Strip Assembly
e)	A-8050	Plunger Assembly, 2-1/4"
f)	B-11302	Lift Mech Bracket Assy
g)	SM1-26-600	Coil Assembly
h)	10-363	Extension Spring
j)	12-6227	Hairpin Clip
k)	4004-01003-10	Mach. Screw, 4-40 xx 5/8
m)	4008-01021-07	Mach. Screw, 8-32 x 7/16
n)	4700-00073-00	Flatwasher, 9/32 x 1/2
p)	4700-00089-00	Flatwasher, 11/64 x 7/16
q)	4701-00003-00	Lockwasher, #8 Split
r)	5070-06258-00	Diode, 1N4001, 1.0A.
s)	5647-12001-00	Microswitch
3	B-13935	Coil & Bracket Assembly
a)	B-7572-1	Bracket & Stop Assembly
b)	01-8-508-S	Coil Retaining Bracket
c)	4006-01017-06	Mach. Screw, 6-32 x 3/8
d)	4406-01119-00	Nut, 6-32 ESN
e)	AE-26-1500	Coil Assembly
4	10-399	Compression Spring

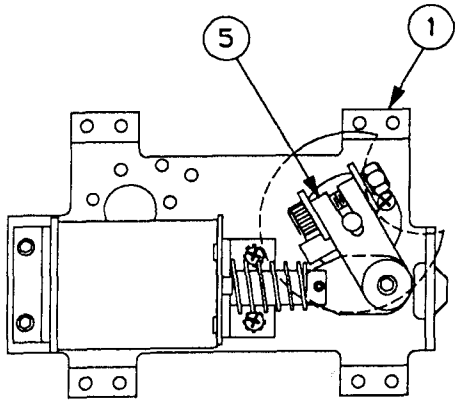
A-13962
Trap Door Assembly

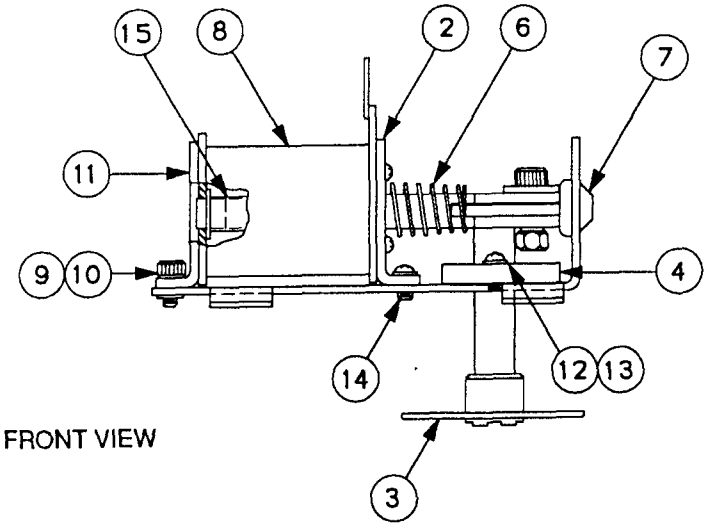
Item	Part No.	Description
1	A-14155	Trap Door Hinge Assembly
2	01-9899	Flap
3	01-9902	Plate Protector
4	03-8500	Trap Door
5	07-6688-20	Rivet, 1/4 x 7/32
6	4404-01119-00	Nut, 4-40 ESN
7	4700-00003-00	Flatwasher, 1/8 x 7/32
8	31-3-50003-1	Trapdoor Decal
9	01-9901	Lifter Guide Pin

A-14254 Ball Dispenser Assembly

Item	Part Number	Description
1	A-12111	Flipper Armature Stop Assy
2	A-14151	Disc Assembly
a)	01-9898	Disc
3	A-14189	Coil Assembly
4	B-10655-L	Crank Link Assy, Left
a)	A-10656	Flipper Link Assy
b)	B-10657-L	Flipper Crank Assembly, Left
5	B-13104-L	Flipper Bracket Sub-Assembly
6	01-7695	Solenoid Bracket
7	03-7066-5	Coil Tubing
8	03-7568	Flipper Bushing
9	10-422	Spring
10	23-6577	Rubber Plug Bumper, 5/8
11	4006-01005-06	Mach. Screw, 6-32 x 3/8
12	4006-01017-04	Mach. Screw, 6-32 x 1/4
13	4010-01066-06	Cap Screw, 10-32 x 3/8
14	4406-01117-00	Nut, 6-32 Hex.
15	4701-00004-00	Lockwasher, #10 Split

TOP VIEW





FRONT VIEW

A-13894 Lower Ramp Assy

Item	Part No.	Description
1	A-12887	Socket & Bulb Assembly
a)	24-8768	Bulb #555 (6.3v, .25A.)
b)	24-8807-1	Socket-Wedge Base
2	A-14170	Lft. Sign Bracket Assembly
a)	A-8882	Light Socket Assy. w/Diode
b)	01-9914	Bracket
c)	03-8063-4	Light Bulb Sleeve, Red
d)	31-1-50003-38	Playfield Plastic, Screened
3	A-14266	Mini Dome & Plastic Assy.
4	A-14307	Lower Ramp Sub-Assy.
5	H-14252-13	G.I. Lamp Cable
6	H-14252-8	Lower Ramp Cable
7	01-8795	Flap
8	01-9476-2	Ramp Bracket Switch
9	01-9499	Bearing Plate
10	02-4252-12	F-F, 6-32 x 3/4
11	03-8369	Switch Cover
12	03-8457	Lower Ramp
13	4002-01005-08	Mach. Screw, 2-56 x 1/2
14	4006-01017-06	Mach. Screw, 6-32 x 3/8
15	4006-01027-06	Mach. Screw, 6-32 x 3/8
16	4406-01128-00	Nut, 6-32 KEPS
17	4701-00024-00	Lockwasher, #2 Split
18	5070-06258-00	Diode, 1N4001, 1.0A.
19	5647-12073-21	Microswitch

A-13895 Upper Ramp Assy

Item	Part No.	Description
1	A-14197	Impact Bracket Assembly
2	A-14231	LED Assembly
3	A-14232	Photo Transistor Assembly
4	A-14285	Plate & Plastic Assy.
5	A-14306	Upper Ramp Sub-Assy.
6	H-14252-14	Opto Cable
7	H-14252-7	Upper Ramp Cable
8	01-8240	Nut Plate, #2-56
9	01-9476-2	Ramp Switch - Bracket
10	01-9912	Ramp Flap
11	01-9951	Deflector Bracket
12	02-4252-12	F-F 6-32x3/4
13	03-8063-2	Light Bulb Sleeve-Green
14	03-8063-4	Light Bulb Sleeve-Red
15	03-8063-6	Light Bulb Sleeve-Yellow
16	03-8458	Ramp
17	03-8506	Base Opto Mt-Black
18	03-8506-1	Base Opto Mt-White
19	20-9646	Switch Cover Protector
20	24-8768	Bulb #555 (6.3v, .25A.)
21	24-8821	Socket
22	4002-01005-08	Mach. Screw, 2-56 x 1/2
23	4104-01001-06	Sh. Metal Screw, #4 x 3/8
24	4106-01004-06	Sh. Metal Screw, #6 x 3/8
25	4701-00024-00	Lockwasher, #2 Split
26	5070-06258-00	Diode, 1N4001, 1.0A.
27	5647-12073-21	Microswitch

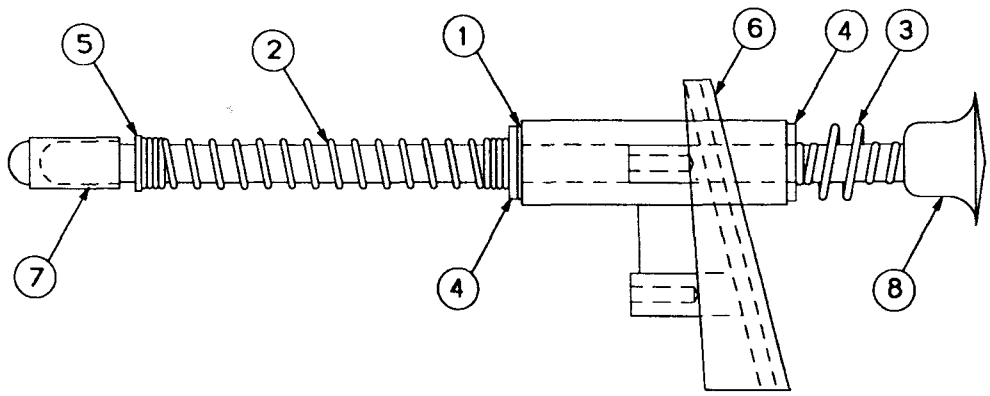
A-13896 X-Over Wire Chute Assembly

Item	Part No.	Description
1	H-14252-2	Ramp Switch Cable
2	01-8240	Nut Plate, #2-56
3	01-8600	Insulator
4	02-4436-15	F-F Spacer, 1-7/16
5	12-6935	Wire Chute
6	4002-01105-07	Mach. Screw, 2-56 x 7/16
7	4408-01119-00	Nut, 8-32 ESN
8	5070-06258-00	Diode 1N4001, 1.0A.
9	5647-12073-21	Microswitch

A-13896 Right Wire Chute Assembly

Item	Part No.	Description
1	H-14252-11	Wireform Switch Cable
2	01-8240	Nut Plate, #2-56
3	01-8600	Insulator
4	02-4436-15	F-F Spacer, 1-7/16
5	12-6936	Wire Chute, Right
6	4002-01105-07	Mach. Screw, 2-56 x 7/16
7	4408-01119-00	Nut, 8-32 ESN
8	5070-06258-00	Diode, 1N4001, 1.0A.
9	5647-12073-21	Microswitch

Ball Shooter Assemblies



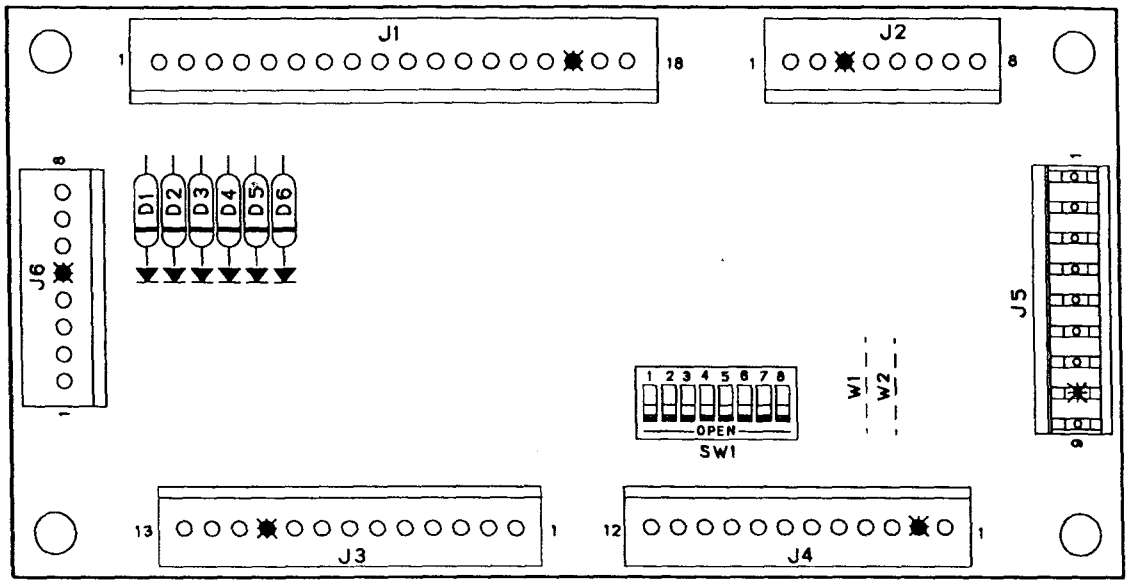
B-7592-2
Ball Shooter Assembly

Item	Part Number	Description
1	03-7357	Shooter Sleeve
2	10-148-1	Shooter Spring
3	10-149	Rod Spring
4	4700-00051-00	Flatwasher, 25/64 x 5/8 x 16ga.
5	20-8718-1	"C"-Retaining Ring
6	21-6645	Ball Shooter Housing
7	23-6327	Rubber Shooter Tip
8	20-9253-7	Rod Assembly

B-11777
Ball Shooter Assembly

Item	Part Number	Description
1	03-7357	Shooter Sleeve
2	10-148-1	Shooter Spring
3	10-149	Rod Spring
4	4700-00051-00	Flatwasher, 25/64 x 5/8 x 16ga.
5	20-8718-1	"C"-Retaining Ring
6	21-6645	Ball Shooter Housing
7	23-6327	Rubber Shooter Tip
8	20-9253-7	Rod Assembly

A-14102 WPC Coin Door Interface Board

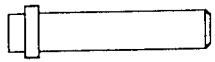


Item	Part Number	Ckt Designator	Description
1	5768-12716-00		PCB-WPC Coin Door
2	5070-09054-00	D1-D6	Diode, 1N4004, 1.0A.
3	5791-10862-18	J1	Connector, 18-pin Header Str Sq.
4	5791-10862-08	J2, J6	Connector, 8-pin Header Str Sq.
5	5791-10862-13	J3	Connector, 13-pin Header Str Sq.
6	5791-10862-09	J5	Connector, 9-pin Header Str Sq.
7	5792-10817-09	J5	9R Mt/End 22/.156

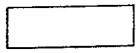
Note: For schematic refer to drawing #16-9152

For Belgium, France, and Switzerland use A-14102-1Coin Door Interface Board

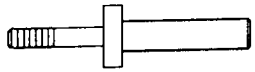
Metal & Plastic Posts



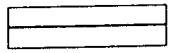
02-3409 Spring Post [1]



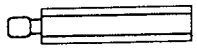
02-4020 Support Post [1]



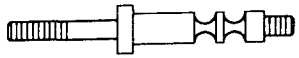
02-4057 Short Bumper Post [4]



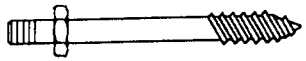
02-4252-12 F-F Spacer, 6-32 x 3/4 [4]



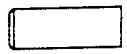
02-4335-8 Mounting Post, 1.44" [1]



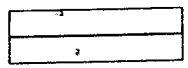
02-4424-1 Post, 6-32/#8-32 [6]
02-4424-2 Post, 6-32/#8-32 [1]



02-4426-1 Post, #6-32 / #8 SMS [8]

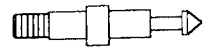


02-4434 Post, #8 x 1" [2]

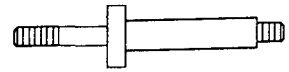


02-4436-11 Spacer, 8-32 x 2-1/4" [1]
02-4436-15 Spacer, 8-32 x 1-7/16" [3]
02-4436-16 Spacer, 8-32 x 3-3/4" [1]

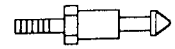
02-4493 Post Double Bumper, Hex. [1]



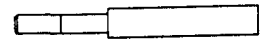
02-4003 Mini Post [7]



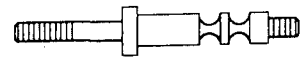
02-4056 Threaded Bumper Post [7]



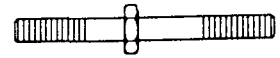
02-4195 Bumper Post 6-32 MS [2]



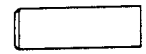
02-4334-13 Mtg. Post, 8-32 x 2-7/8 [1]
02-4334-16 Mtg. Post, 8-32 x 2-1/2 [1]
02-4334-17 Mtg. Post, 8-32 x 5-5/8 [1]



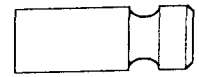
02-4423 Bumper Post [2]



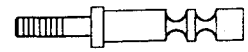
02-4425 -1 Post, #8-32 / #8-32 [2]



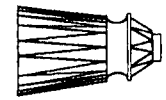
02-4433 Post, #8 x 1-3/16" [5]



02-4435 Post, #8 x 1-3/16" [2]



02-4450 Post Double Bumper [1]

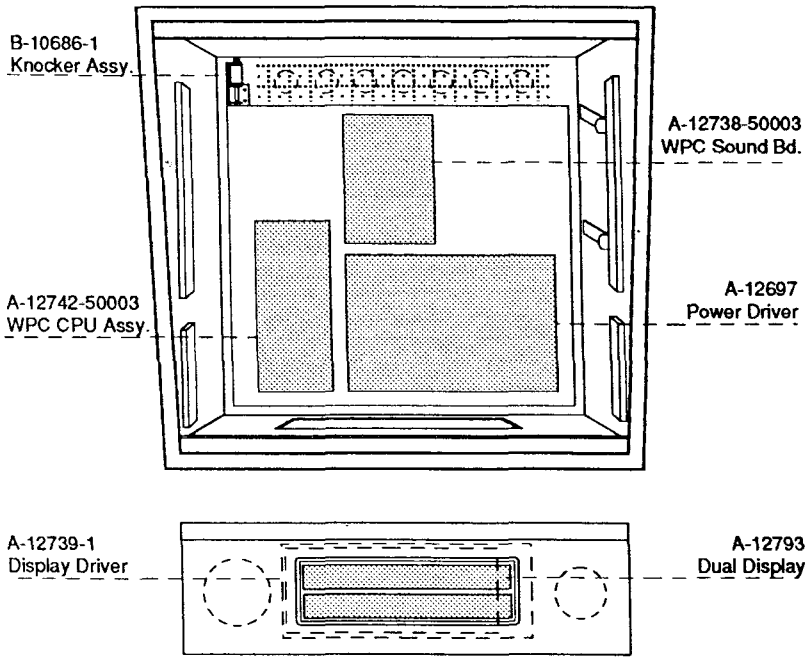


03-8319-13 Plastic Star Post, #8 (Clear) [2]

Unique Parts

A-13718	Head Assembly
A-13735	Coil Bracket Assembly
A-13752	Jaw Drive Assembly
A-13769-50003	Playfield & Inserts
A-13894	Lower Ramp Assembly
A-13895	Upper Ramp Assembly
A-13896	X-Over Wire Chute Assy
A-13897	Right Wire Chute Assy
A-13941	Eject Assembly
A-13942	Bracket Assembly
A-13961	Trap Door Mech Assembly
A-13962	Trap Door Assembly
A-13966	Chute Assembly
A-13993	Loop Assembly
A-13994	Loop Weld Assembly
A-13995	Drain Weld Assembly
A-13997	Motor Assembly
A-14018	Ball Gate Assembly
A-14028	Plunger Assembly
A-14030	Plunger Assembly - M/Lid
A-14035	Ball Guide Assembly
A-14036	Ball Guide Assembly
A-14062	Ball Guide Assembly
A-14063	Ball Guide Assembly
A-14064	Ball Guide Assembly
A-14065	Ball Guide Assembly
A-14066	Ball Guide Assembly
A-14068	Ball Guide Assembly
A-14069	Ball Guide Assembly
A-14070	Ball Guide Assembly
A-14078	Flipper Ball Guide Assy-R
A-14079	Flipper Ball Guide Assy-L
A-14080	Ball Guide Assembly
A-14081	Ball Guide Assembly
A-14094-1	G.I. & Flash Lamp Assy
A-14107	Kicker Assembly
A-14138	3-Switch Assembly
A-14143	Kickbig Assembly
A-14147	Diverter Assembly
A-14151	Disc Assembly
A-14155	Trapdoor Hinge Assy
A-14156	Shooter Ramp Assy
A-14161	Lift Assembly
A-14163	Lift Assembly
A-14169	Right Sign Bracket Assy
A-14170	Left Sign Bracket Assy
A-14190	Drain Assembly
A-14196	Shooter Gae Assembly
A-14231	LED Assembly
A-14254	Ball Dispenser Assembly
A-14263	Ball Guide Assembly
A-14264	Ball Guide Assembly
A-14292	X-Over Coil & Bracket Assy
A-14308	Ball Trap Cover Assy
A-8039-3	Outhole Assembly
A-8552-50003	Backglass Assembly
A-8567-50003	Domestic Cashbox Assy
A-9415-2	Jet Bumper Coil Assembly
C-13174-L-1	Flipper Assembly
H-13831-50003	Playfield Switch Cable
H-13832-50003	Playfield Lamp Cable
H-13833-50003	Playfield Solenoid Cable
H-14252-1	Motor Cable
H-14252-10	Mirror Cable
H-14252-11	Wireswitch Cable
H-14252-12	Single Lamp Cable
H-14252-14	Opto Cable
H-14252-2	Ranp Switch Cable
H-14252-3	Rudy Eye Cable
H-14252-4	Rudy Kicker Cable
H-14252-5	Opto Detector Cable
H-14252-6	Opto Cable
H-14252-7	Upper Ramp Cable
H-14252-8	Lower Ramp Cable
H-14252-9	Flasher Panel Cable
02-4252-12	F-F Mtg. Post, 6-32 x 3/4
02-4334-16	Mtg. Post, 8-32 x 2-1/2
02-4334-17	Mtg. Post, 8-32 x 5-5/8
02-4436-15	F-F Spacer, 1-7/16
02-4436-16	F-F Spacer, 3-3/34
02-4493	Post, Dbl Bumper Hex.
03-7960-50003-1	Mylar Playfield
03-7960-50003-2	Mylar Playfield
11-831-50003	Back Panel
31-11-50003	Screened Playfield Plastics
31-1002-50003	Screened Playfield
31-1008-50003	Screened Bottom Arch
31-1009-50003	Screened Shooter
31-1357-50003	Screened Backglass
31-1588-50003-1	Face, Screened
31-1588-50003-2	Back Of Head Screened
31-2-50003-1	Jet Cap Decals
31-2-50003-2,-3,-4	Ramp Decals
31-3-50003-1	Trapdoor Decal

FUNHOUSE Backbox Parts



Item	Part Number	Description	Item	Part Number	Description
1	01-6645	Venting Screen	9	A-13767-50003	**FUNHOUSE** Backbox
2	B-10686-1*	Knocker & Bracket Assy	10	01-9047	Insert Stop Bracket
3	A-12497	Upr Insert Bd Hinge Assy	11	A-13379	Lock Plate Assembly
4	A-14092	Plate & Clip Assembly	a)	20-9637	Lock & Cam Kit
5	A-12498	Lwr Insert Bd Hinge Assy	12	A-14162	Speaker / Display Assembly
6	A-12697-1	Power Driver Assembly	a)	A-14087-1	WPC Display/Driver Assy.
7	A-12738-50003	WPC Sound Board	1)	A-12739-1	WPC Display Drive Assy.
8	A-12742-50003	WPC CPU Board	b)	5555-12015-00	Speaker, 8Ω, 6", 20w
			c)	5555-12068-00	Piezo Speaker, 4", 50w.

* Refer to Individual Unit's Parts List
** Insert Assembly not shown in Backbox Parts Location Diagram

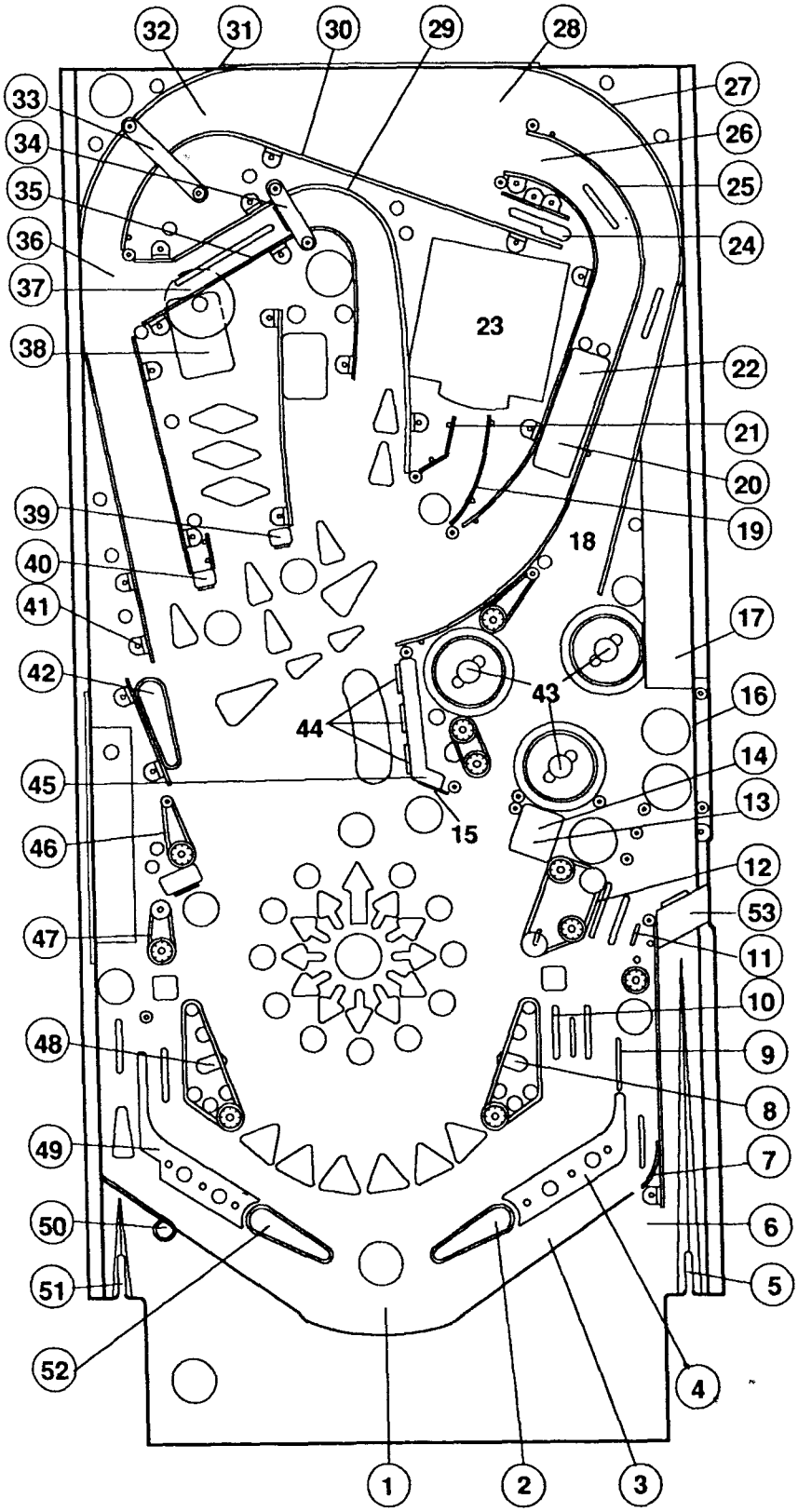
Playfield Parts

No.	Part No.	Descritpion
1	A-8039-3	Outhole Kicker
2	C-13174-R	Flipper Assembly
3	B-8925	Switch Plate
4	A-14078	Flipper Ball Guide
5	A-11619	Shooter Lane Switch
6	B-9362-R-3	Coil & Bracket Assy
7	A-14081	Ball Guide
8	B-11203-R-1	Kicker (sling) Assy
9	12-6466-7	Wireform
10	12-6406-5	Wireform
11	12-6466-2	Wireform
12	23-6304	Rubber Ring
13	A-13993	Loop Assembly
14	A-14107	Kicker
15	A-12001-1	Blue Stand-up Tgt
16	23-6305	Rubber Ring
17	A-14156	Shooter Ramp
18	A-14163	Diverter Ball Guide
	A-14147	Diverter Assembly
19	A-14232	Photo Transistor
20	A-13962	Trap Door Hinge
	A-13961	Trap Door Lift Mech
21	A-14231	LED Assembly
22	03-8502	Trap Door Floor
23	A-13718	Rudy Assembly
24	A-14143	Metal Kickbig
	B-11203-L	Coil & Bracket Assy
25	A-14035	Ball Guide
26	A-13894	Lower Ramp Assy
27	A-14036	Ball Guide
28	C-13963	H/Driver Assy
29	A-14067	Ball Guide
30	A-14070	Ball Guide
31	A-14080	Ball Guide
32	A-13901	Opto PCB
33	A-13376	Ball Gate Assy
34	A-12120	Ball Gate Assy
35	A-14068	Ball Guide
36	A-13895	Upper Ramp Assy
37	A-14151	Disc Assembly
38	A-14254	Ball Dispenser
39	B-12583-1	Oblong Stand-up Tgt
40	B-12583-1	Oblong Stand-up Tgt
41	A-14065	Ball Giude
42	C-13174-1	Flipper Assembly
43	B-9415-2	Jet Bumpers
44	B-12001-4	Red Stand-up Tgt
45	A-14169	Right Sign Assy
46	23-6301	Rubber Ring
47	23-6302	Rubber Ring
48	B-112-3-L-1	Kicker (sling) Assy
49	A-14079	Flipper Ball Guide
50	A-9572	Post & Gate Assy
51	A-11691-1	Shooter Lane Switch
52	C-13174-L	Flipper Assembly
53	A-14196	Shooter Lane Gate

Parts Under Bottom Arch

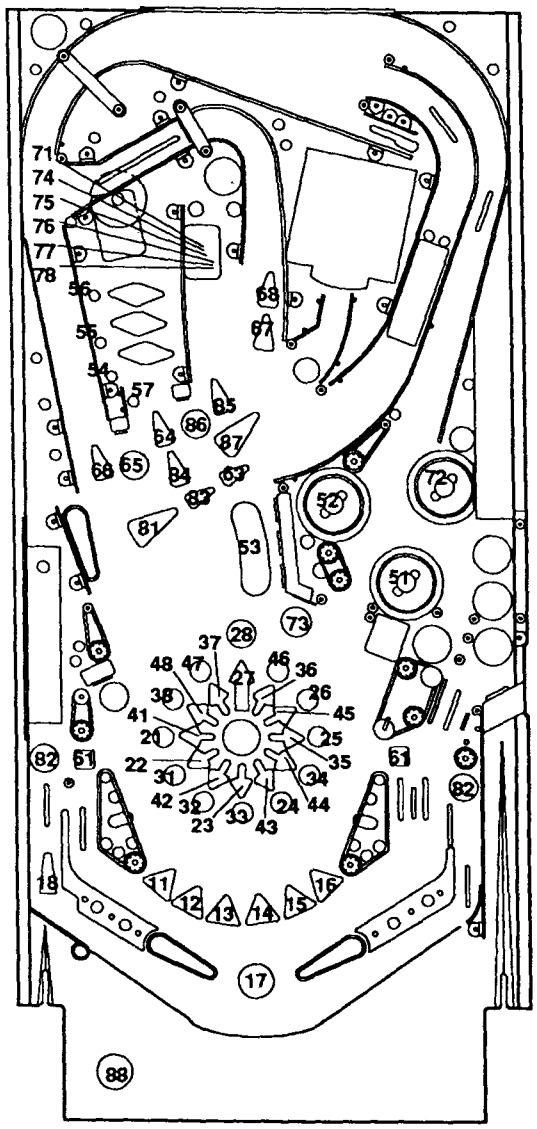
A-8645	Wireform & Bracket
A-10417	Microswitch Assembly
A-11680	Sub-mini Switch Assmbly
B-8623	Guide & Baffle Assembly
C-8235	Ball Runway Assembly
C-9638	Ball Shooter Lane Feeder (trough)
01-3569-1	Ball Return Runway
10-128	Kicker Spring
12-6542	Wireform

Playfield Parts

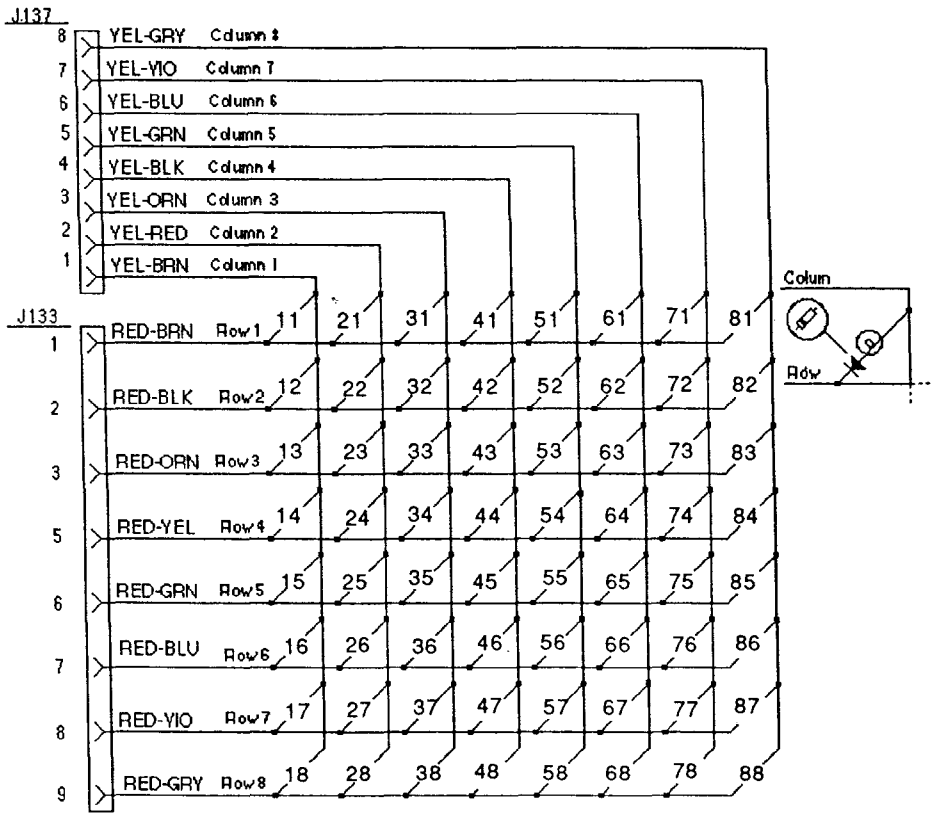


Lamps

No.	Bulb	Description
11.	#555	Gangway 75, 000
12.	#555	Gangway 10, 000
13.	#555	Gangway 150, 000
14.	#555	Gangway 200, 000
15.	#555	Gangway 250, 000
16.	#555	Gangway Lights Ex. Ball
17.	#44	Shoot Again
18.	#555	Steps Open (gate)
21.	#555	Clock 45 Mins.
22.	#555	Clock 8 o' clock
23.	#555	Clock 6 o' clock
24.	#555	Clock 25 Mins.
25.	#555	Clock 15 Mins.
26.	#555	Clock 10 Mins.
27.	#555	Clock 12 Mins.
28.	#555	Clock 0 Mins.
31.	#555	Clock 40 Mins.
32.	#555	Clock 35 Mins.
33.	#555	Clock 30 Mins.
34.	#555	Clock 20 Mins.
35.	#555	Clock 3 o' clock
36.	#555	Clock 1 o' clock
37.	#555	Clock 11 o' clock
38.	#555	Clock 50 Mins.
41.	#555	Clock 9 o' clock
42.	#555	Clock 7 o' clock
43.	#555	Clock 5 o' clock
44.	#555	Clock 4 o' clock
45.	#555	Clock 2 o' clock
46.	#555	Clock 5 Mins.
47.	#555	Clock 55 Mins.
48.	#555	Clock 10 o'clock
51.	#555	Lower Jet Bumper
52.	#555	Upper Jet Bumper
53.	#44	Superdog Lamp
54.	#555	Steps Lights Frenzy
55.	#555	Steps Lights Ex. Ball
56.	#555	Steps 500, 000
57.	#44	Ramp Overhead Lamp
58.	#44	Rt. Gangway Ovrhd Lamp
61.	#44	Rt. Flipper Lanes
62.	#44	S-T-E-P "S"
63.	#555	Trap Door Bonus
64.	#555	Ramp Scores 250, 000
65.	#44	S-T-E-P "T"
66.	#44	Upper Lt. Gangway Ln
67.	#555	Extra Ball Lamp
68.	#555	Lock
71.	#555	Magic Mirror Lghts Ex. Ball
72.	#555	Upper Rt. Jet Bumper
73.	#44	S-T-E-P "P"



No.	Bulb	Description
74.	#555	Magic Mirror Lights Million
75.	#555	Magic Mirror Lights Jet Bumper
76.	#555	Magic Mirror Lights Superdog
77.	#555	Magic Mirror Opens Gate
78.	#555	Magic Mirror Lghts Quick Multi-ball
81.	#555	Million Plus
82.	#44	Special Outlanes
83.	#555	Trap Door Frenzy
84.	#555	Ramp "Steps" Lamp
85.	#44	Magic Mirror Arrow
86.	#44	S-T-E-P "E"
87.	#44	Million
88.	#555	Start Button (cabinet)


J137
8 YEL-GRY Column 8
7 YEL-VIO Column 7
6 YEL-BLU Column 6
5 YEL-GRN Column 5
4 YEL-BLK Column 4
3 YEL-ORN Column 3
2 YEL-RED Column 2
1 YEL-BRN Column 1
J133
1 RED-BRN Row1 11 21 31 41 51 61 71 81
2 RED-BLK Row2 12 22 32 42 52 62 72 82
3 RED-ORN Row3 13 23 33 43 53 63 73 83
5 RED-YEL Row4 14 24 34 44 54 64 74 84
6 RED-GRN Row5 15 25 35 45 55 65 75 85
7 RED-BLU Row6 16 26 36 46 56 66 76 86
8 RED-VIO Row7 17 27 37 47 57 67 77 87
9 RED-GRY Row8 18 28 38 48 58 68 78 88
Colum
Row

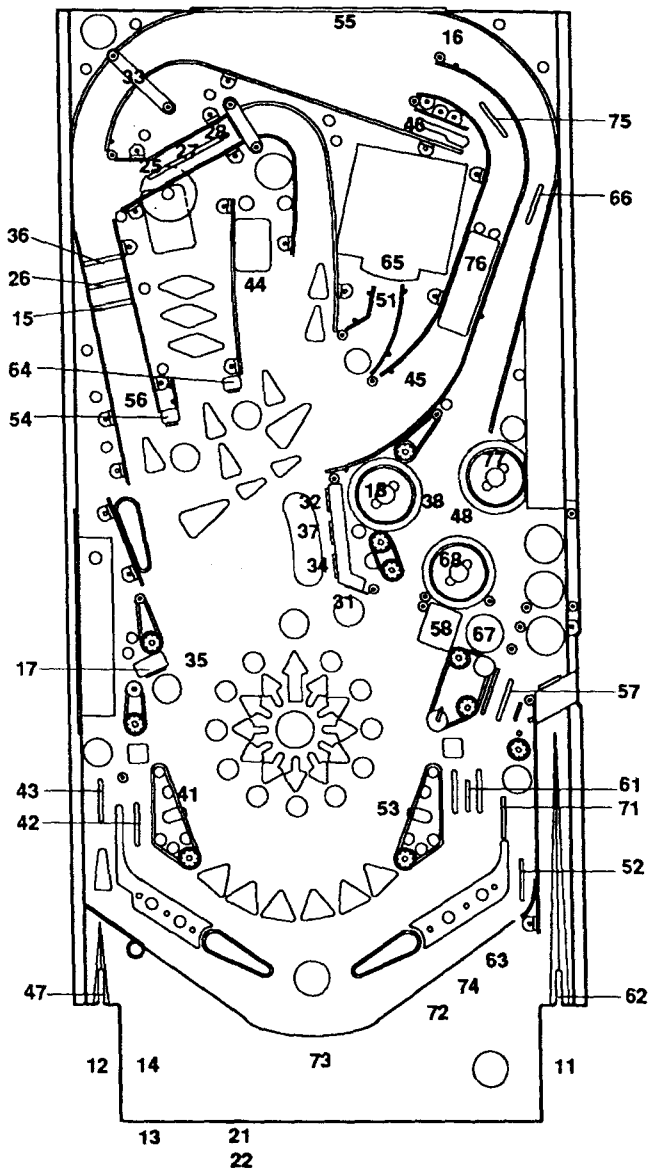
FUNHOUSE Lamp Matrix

Yellow (B+) — Red

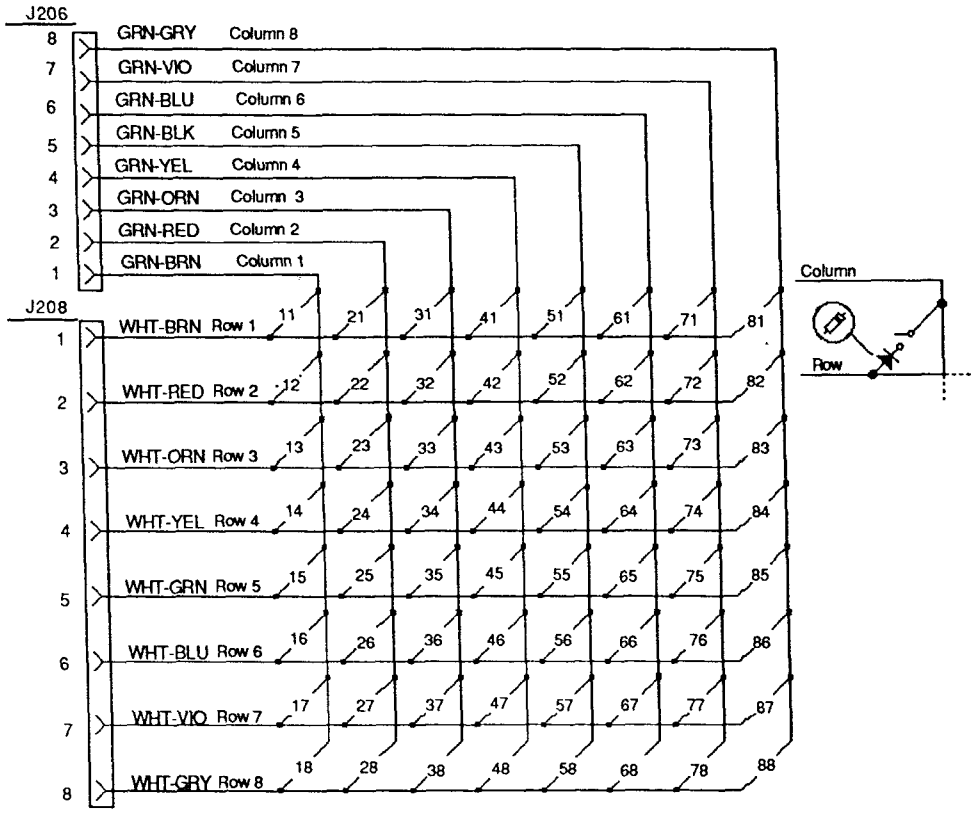
Row \ Column	1 Yellow-Brown	2 Yellow-Red	3 Yellow-Orange	4 Yellow-Black	5 Yellow-Green	6 Yellow-Blue	7 Yellow-Violet	8 Yellow-Gray
1 Red-Brown	(1) Gangway 75,000 (Left) 11	(9) Clock 45 Minutes 21	(17) Clock 40 Minutes 31	(25) Clock 9 o' clock 41	(33) Lower Left Jet Bumper 51	(41) Left & Inside Rt Flipper Lanes (x 2) 61	(49) Magic Mirror Lights Extra Ball 71	(57) Million Plus 81
2 Red-Black	(2) Gangway 100,000 12	(10) Clock 8 o' clock 22	(18) Clock 35 Minutes 32	(26) Clock 7 o' clock 42	(34) Upper Left Jet Bumper 52	(42) S-T-E-P "S" 62	(50) Upper Right Jet Bumper 72	(58) Special Outlanes (x 2) 82
3 Red-Orange	(3) Gangway 150,000 13	(11) Clock 6 o' clock 23	(19) Clock 30 Minutes 33	(27) Clock 5 o' clock 43	(35) Superdog Lamp (x 2) 53	(43) Trap Door Bonus 63	(51) S-T-E-P "P" 73	(59) Trap Door Frenzy 83
4 Red-Yellow	(4) Gangway 200,000 14	(12) Clock 25 Minutes 24	(20) Clock 20 Minutes 34	(28) Clock 4 o' clock 44	(36) Steps Lights Frenzy 54	(44) Ramp Scores 250,000 64	(52) Magic Mirror Lights Million 74	(60) Ramp "Steps" Lamp 84
5 Red-Green	(5) Gangway 250,000 15	(13) Clock 15 Minutes 25	(21) Clock 3 o' clock 35	(29) Clock 2 o' clock 45	(37) Steps Lights Extra Ball 55	(45) S-T-E-P "T" 65	(53) Magic Mirror Lights Jet Bumpers 75	(61) Magic Mirror Arrow 85
6 Red-Blue	(6) Gangway Lights Extra Ball 16	(14) Clock 10 Minutes 26	(22) Clock 1 o' clock 36	(30) Clock 5 Minutes 46	(38) Steps 500,000 56	(46) Upper Left Gangway Lane 66	(54) Magic Mirror Lights Superdog 76	(62) S-T-E-P "E" 86
7 Red-Violet	(7) Shoot Again 17	(15) Clock 12 Minutes 27	(23) Clock 11 o' clock 37	(31) Clock 55 Minutes 47	(39) Ramp Overhead Lamp 57	(47) Extra Ball Lamp 67	(55) Magic Mirror Opens Gate 77	(63) Million 87
8 Red-Gray	(8) Steps Open (Gate) 18	(16) Clock 0 Minutes 28	(24) Clock 50 Minutes 38	(32) Clock 10 o' clock 48	(40) Right Gangway Overhead Lamp 58	(48) Lock 68	(56) Magic Mirror Lights Quick Multi-ball 78	(64) Start Button (Cabinet) 88

Switches

No.	Switch	Description
11	A-9990-1	Right Flipper
12	A9989-1	Left Flipper
13	20-9663-1	Start Button
14	20-6502-A	Plumb Bob Tilt
15	5647-12073-21	Steps Lights Frenzy
16	5647-12073-21	Upper Ramp Switch
17	B-12001-1	S-T-E-P "S"
18	B-12030-2	Left Jet Bumper
21	27-1066	Slam Tilt
22	A-8630	Front Door
23	Not Used	Ticket Dispenser
24	A-8630	Test Position(closed)
25	A-14138	Lock Mech Right
26	5647-12073-21	Steps lights Ex. Ball
27	A-14138	Lock Mech Center
28	A-14138	Lock Mech Left
31	B-12001-1	S-T-E-P "P"
32	B-12001-4	Top Superdog Tgt
33	A-12010	Lt. Gangway Rollunder
34	B-12001-4	Bottom Superdog Tgt
35	5647-12073-21	Steps Track Lower
36	5647-12073-21	Steps 500, 000
37	B-12001-4	Center Superdog Tgt
38	5647-12073-21	Steps Track Upper
41	A-4834-H	Left (sling) Kicker
42	A-12688	Lt. Flipper Return Ln.
43	A-12688	Left Outlane
44	A-12238	Wind Tunnel Hole
45	A-12238	Trap Door Open
46	A-11608	Rudy Hideout Kickbig
47	A-11619-1	Left Ballshooter
48	5647-12073-21	Ramp Exit Track
51	A-13901	Dummy Jaw (opto)
52	A-12688	Right outlane
53	A-4843-H	Right (sling) Kicker
54	B-12583-1	S-T-E-P "T"
55	A-13901	Steps Superdog (opto)
56	5647-12073-21	Ramp Entrance
57	A-12688	Jet Bumper Lane
58	5647-12073-25	Tunnel Kickout
61	A-12688	Rt. Inside Return Ln.
62	A-11619	Right Ballshooter
63	p/o B-8925	Right Trough
64	B-12583-1	S-T-E-P "E"
65	5647-12073-43	Dummy Eject Hole
66	A-12688	Right Gangway Ln.
67	A-12238	Lower Right Drop Hole
68	B-12030-2	Lower Jet Bumper
71	A-12688	Rt. Outside Return Ln.
72	A-11680	Left Trough
73	A-10417	Outhole
74	p/o B-8925	Center Trough
75	A-12688	Upper Right Loop



No.	Switch	Description
76	5647-12001-00	Trap Door Closed
77	B-12030-2	Right Jet Bumper
78-88		Not Used


J206
8 GRN-GRY Column 8
7 GRN-VIO Column 7
6 GRN-BLU Column 6
5 GRN-BLK Column 5
4 GRN-YEL Column 4
3 GRN-ORN Column 3
2 GRN-RED Column 2
1 GRN-BRN Column 1
J208
1 WHT-BRN Row 1 11 21 31 41 51 61 71 81
2 WHT-RED Row 2 12 22 32 42 52 62 72 82
3 WHT-ORN Row 3 13 23 33 43 53 63 73 83
4 WHT-YEL Row 4 14 24 34 44 54 64 74 84
5 WHT-GRN Row 5 15 25 35 45 55 65 75 85
6 WHT-BLU Row 6 16 26 36 46 56 66 76 86
7 WHT-VIO Row 7 17 27 37 47 57 67 77 87
8 WHT-GRY Row 8 18 28 38 48 58 68 78 88
Column
Row

FUNHOUSE Switch Matrix

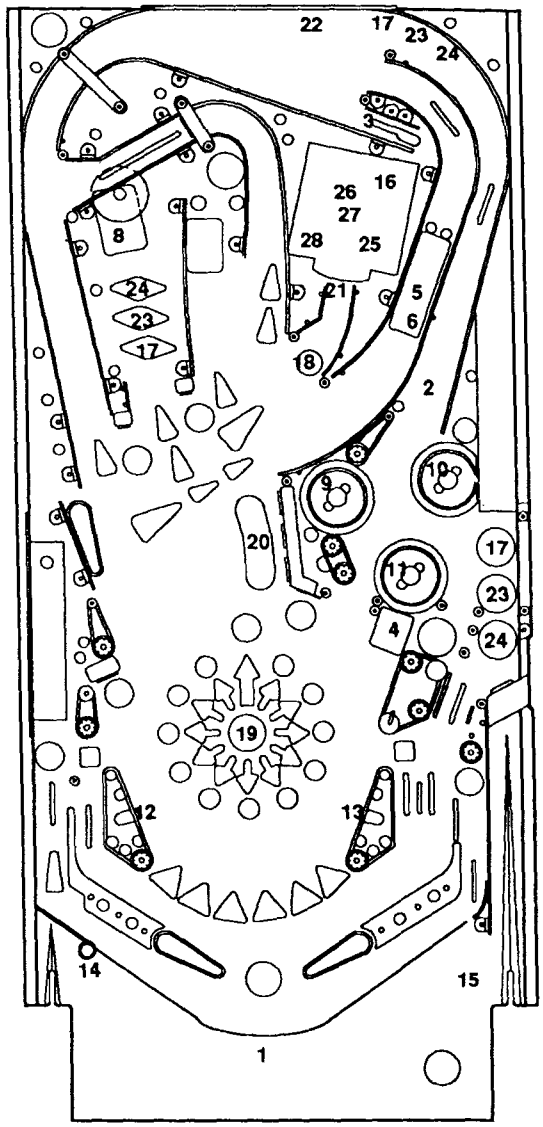
White ——|/o—— Green

Dedicated Grounded Switches	Row \ Column	1 Green-Brown	2 Green-Red	3 Green-Orange	4 Green-Yellow	5 Green-Black	6 Green-Blue	7 Green-Violet	8 Green-Gray
Orange-Brown (1) Left Coin Chute D1	1 White-Brown	(9) Right Flipper 11	(17) Slam Tilt 21	(25) S-T-E-P "P" (Lower Right) 31	(33) Left Slingshot (Kicker) 41	(41) Dummy Jaw (Opto) 51	(49) Rt Inside Flipper Return Lane 61	(57) Rt Outside Flipper Return Lane 71	(65) 81
Orange-Red (2) Center Coin Chute D2	2 White-Red	(10) Left Flipper 12	(18) Front Door 22	(26) Top Superdog Standup Target 32	(34) Left Flipper Return Lane 42	(42) Right Outlane 52	(50) Right Ball-shooter 62	(58) Left Trough 72	(66) 82
Orange-Black (3) Right Coin Chute D3	3 White-Orange	(11) Start Button 13	(19) Not Used 23	(27) Upper Left Gangway Rollunder 33	(35) Left Outlane 43	(43) Right Slingshot (Kicker) 53	(51) Right Trough 63	(59) Outhole 73	(67) 83
Orange-Yellow (4) 4th Coin Chute D4	4 White-Yellow	(12) Plumb Bob Tilt 14	(20) Test Position, Always Closed 24	(28) Bottom Superdog Standup Target 34	(36) Wind Tunnel Hole 44	(44) S-T-E-P "T" (Upper Left) 54	(52) S-T-E-P "E" (Upper Center) 64	(60) Center Trough 74	(68) 84
Orange-Green (5) Normal Function / Test Function: Service Credits / Escape D5	5 White-Green	(13) Steps Lights Frenzy 15	(21) Lock Mech Right 25	(29) Steps Track Lower 35	(37) Trap Door 45	(45) Steps Superdog (opto) 55	(53) Dummy Eject Hole 65	(61) Upper Right Loop Switch 75	(69) 85
Orange-Blue (6) Normal Function / Test Function: Volume Down / Down D6	6 White-Blue	(14) Upper Ramp Switch 16	(22) Steps Lights Extra Ball 26	(30) Steps 500, 000 36	(38) Rudys Hideout Kickbig 46	(46) Ramp Entrance 56	(54) Upper Right Gangway Lane 66	(62) Trap Door Closed 76	(70) 86
Orange-Violet (7) Normal Function / Test Function: Volume Up / Up D7	7 White-Violet	(15) S-T-E-P "S" (Lower Left) 17	(23) Lock Mech Center 27	(31) Center Superdog Standup Target 37	(39) Left Ball-shooter 47	(47) Jet Bumper Lane 57	(55) Lower Right Drop Hole 67	(63) Upper Right Jet Bumper 77	(71) 87
Orange-Gray (8) Normal Function / Test Function: Begin Test / Enter D8	8 White-Gray	(16) Upper Left Jet Bumper 18	(24) Lock Mech Left 28	(32) Steps Track Upper 38	(40) Ramp Exit Track 48	(48) Tunnel Kickout 58	(56) Lower Jet Bumper 68	(64) 78	(72) 88

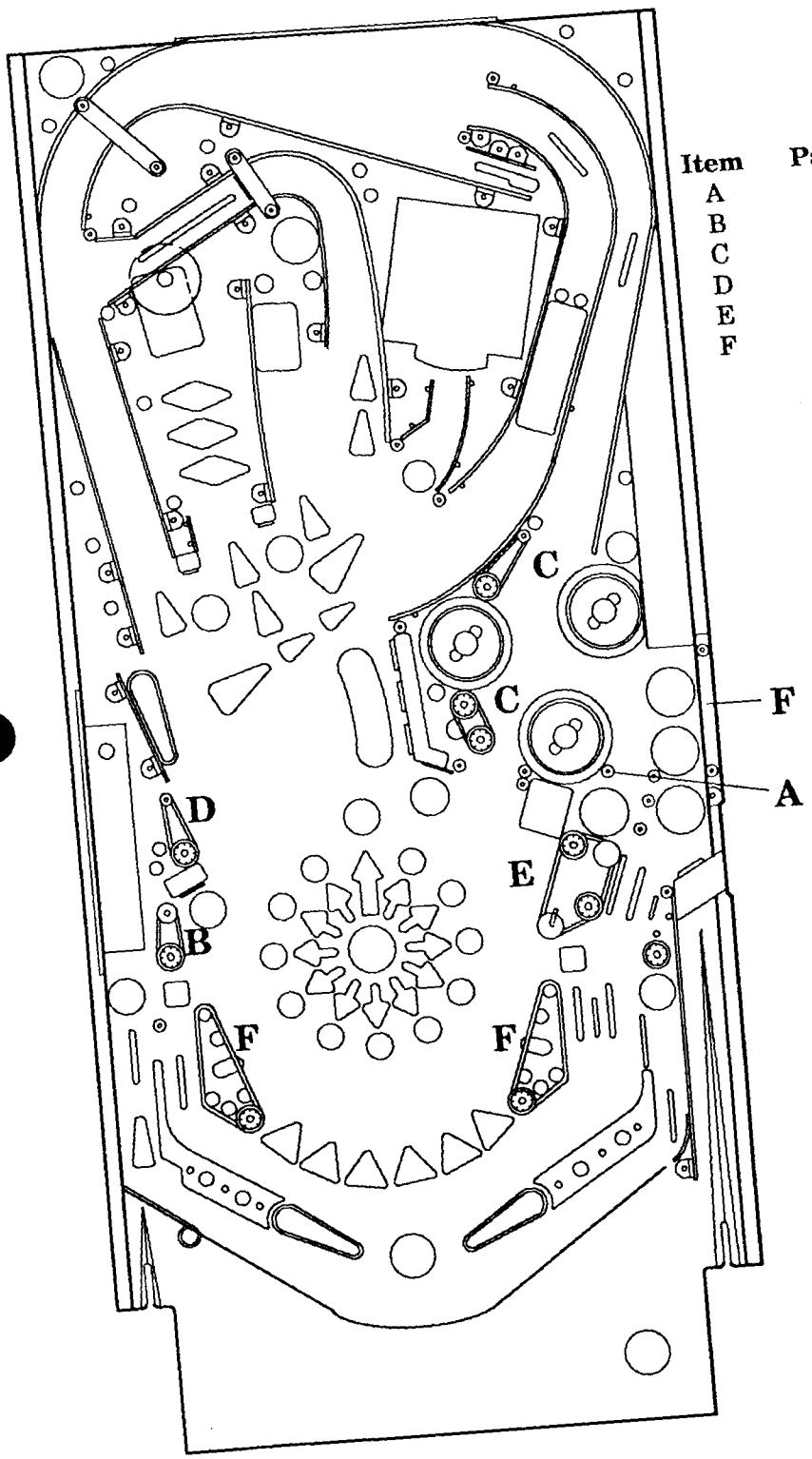
Solenoids

No.	Coil/Bulb	Description
01	AE-26-1200	Outhole
02	AE-26-1200	Ramp Diverter
03	AE-26-1500	Kickbig
04	AE-26-1200	Tunnel Kickbig
05	AE-26-1500	Trap Door Open
06	SM1-26-600	Trap Door Closed
07	AE-23-800	Knocker
08	A-14189	Multi-ball Release
09	AE-26-1200	Left Jet Bumper
10	AE-26-1200	Right Jet Bumper
11	AE-26-1200	Lower Jet Bumper
12	AE-26-1500	Left Kicker
13	AE-26-1500	Right Kicker
14	SZ-34-3500	Steps Gate
15	AE-26-1200	Trough
16	AE-26-1500	Dummy Eject Hole
17	#906	3 Blue Flashers
18	#906	Dummy Flashers
19	#906	2 Clock Flashers
20	#906	2 Superdog Flashers
21	A-13997	Mouth Motor
22	C-13963	Up/Down Driver
23	#906	3 Red Flashers
24	#906	3 Clear Flashers
25	SM-30-1100	Eyes Right
26	SM-30-1100	Eyelids Open
27	SM-30-1100	Eyelids Close
28	SM-30-1100	Eyes Left

01	#555	Upper Backglass G.I.
02	#555	Front Playfield G.I.
03	#555	Rear Playfield G.I.
04	#555	Cntr Bckglss/Rt. Rr Plfld G.I.
05	#555	Top Playfield G.I.



Rubber Rings



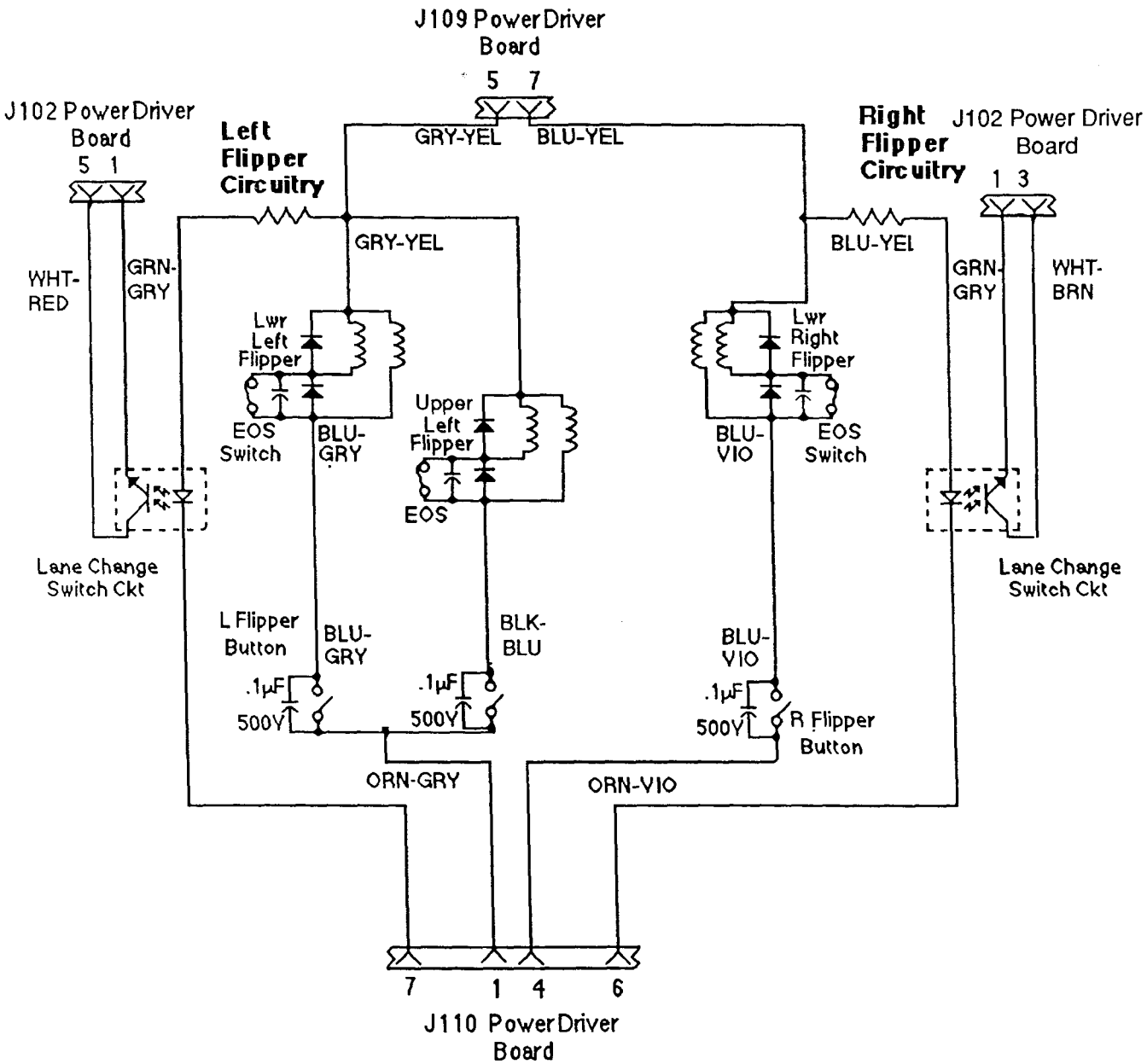
Item	Part Number	Size	Quantity
A	23-6300	5/16	8
B	23-6301	3/4	2
C	23-6302	1	2
D	23-6303	1-1/4	5
E	23-6304	1-1/2	2
F	23-6305	2	4

NOTES

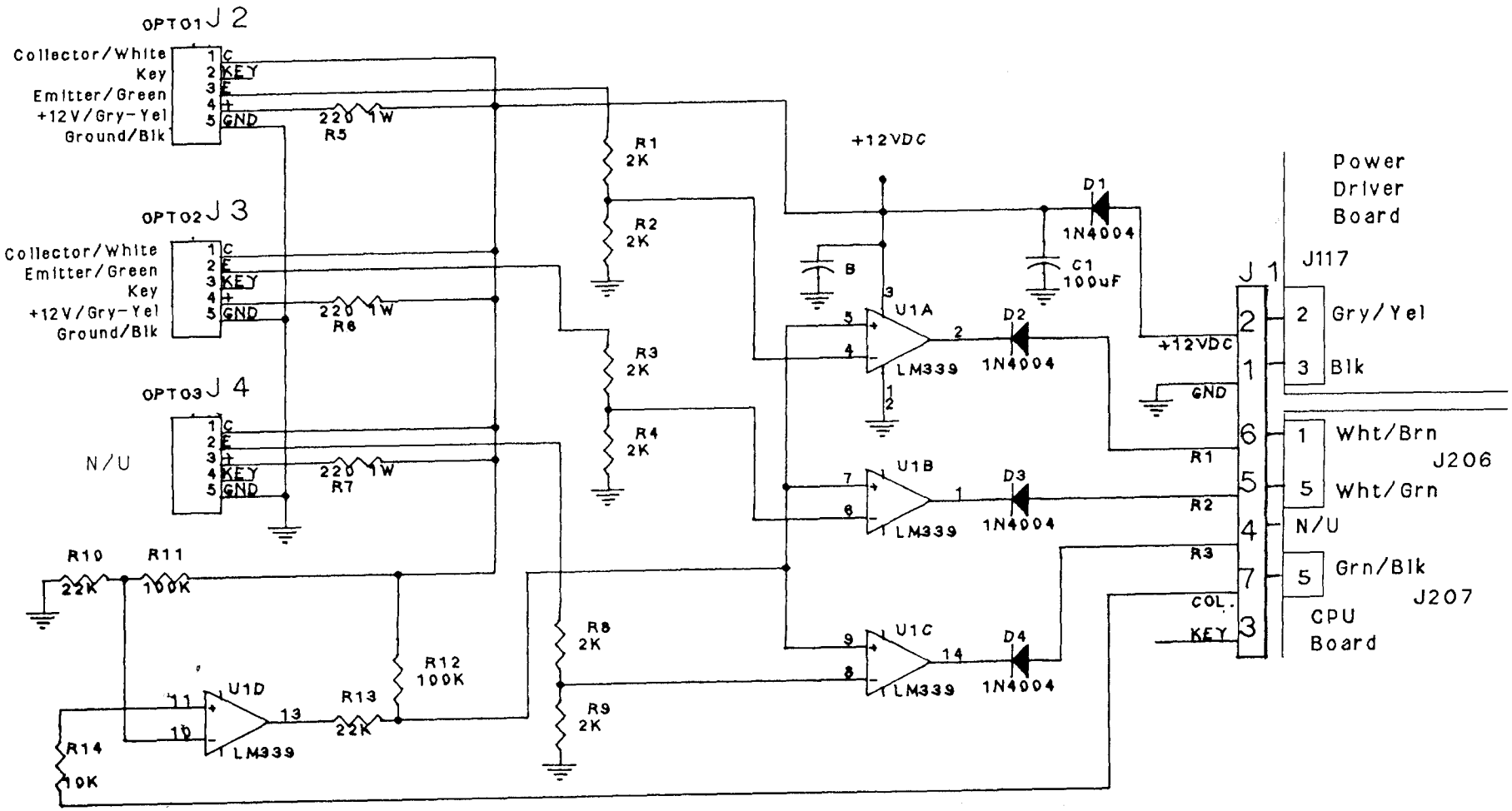
Section 3
Wiring Diagrams and Schematics

- ***Diagrams & Schematics***

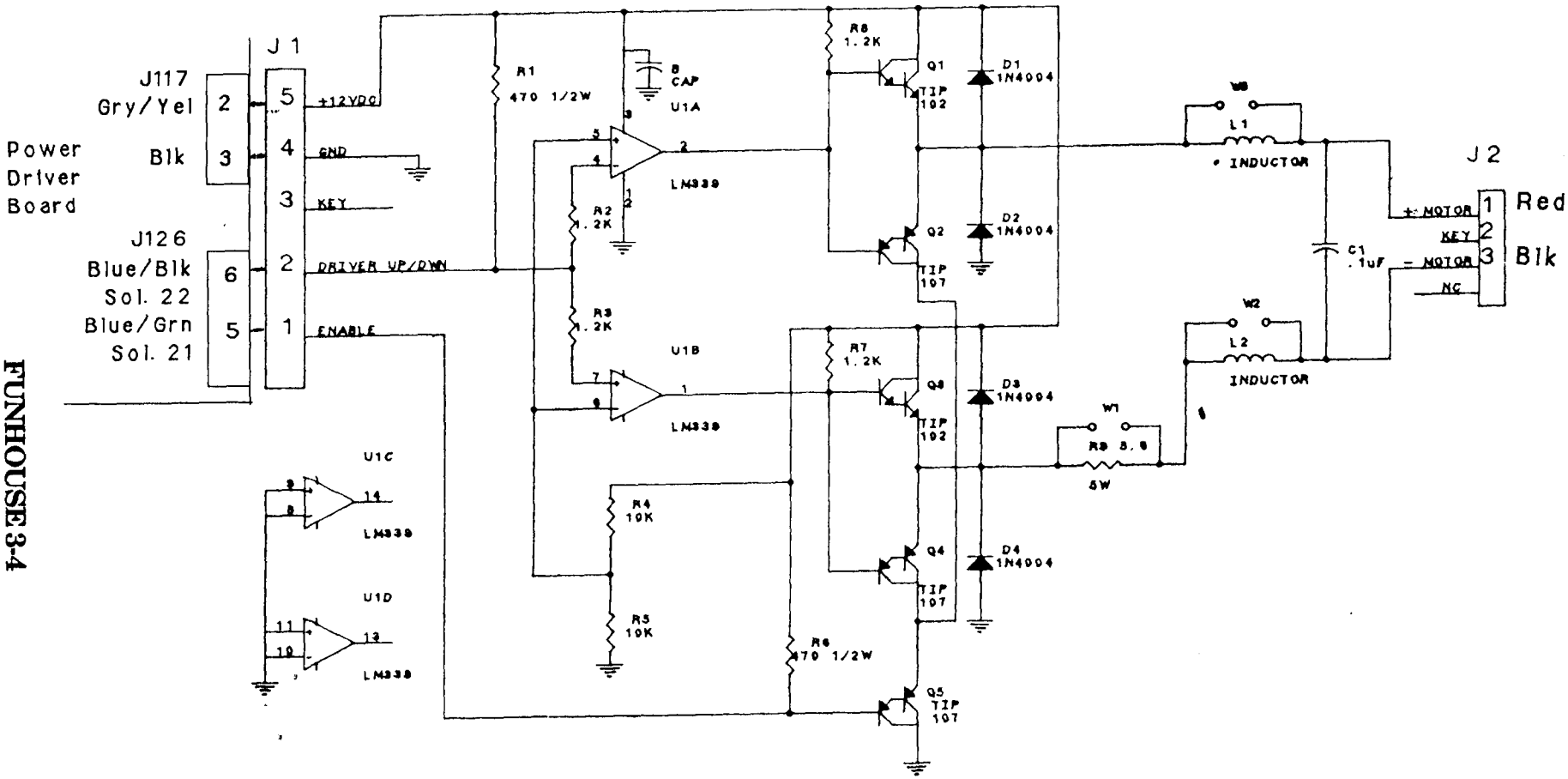
Cabinet
Coin Interface Board
Opto Switch Board
High Current Driver Board
Power Wiring
Solenoid Wiring
CPU Board
Audio Board
Power Driver Board
Display Driver Board
Interboard Wiring



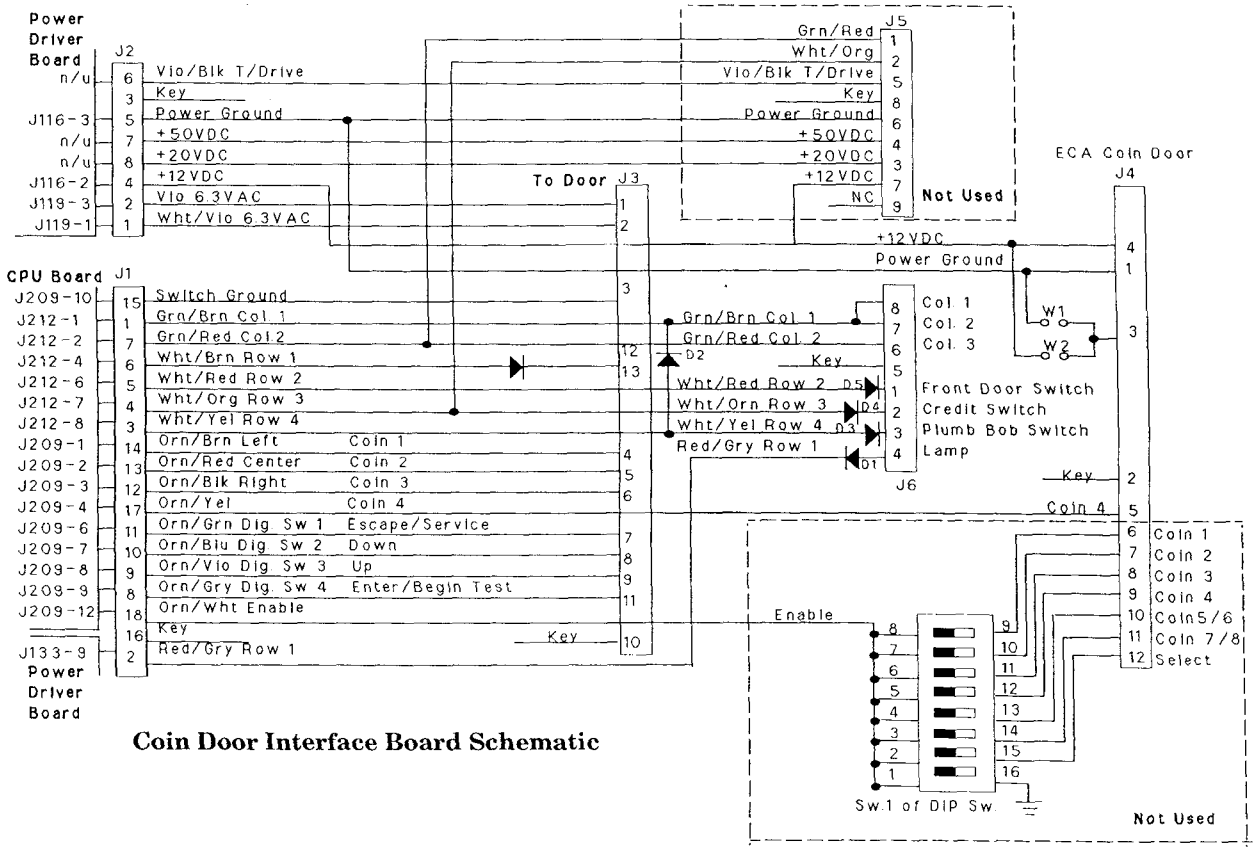
Flipper Wiring



Opto Switch Board



High Current Driver Board



Coin Door Interface Board Schematic

J3		
1	Vio	Vio
2	Wht/Vio	Wht/Blu
3	Blk	Blk
4	Orn/Brn	Red/Wht
5	Orn/Red	Wht/Gry
6	Orn/Blk	Wht/Yel
7	Orn/Grn	Brn/Wht
8	Orn/Blu	Blu
9	Orn/Vio	Yel
10	Key	
11	Orn/Gry	Gry
12	Grn/Red	Grn/Brn
13	Wht/Brn	Wht/Blu

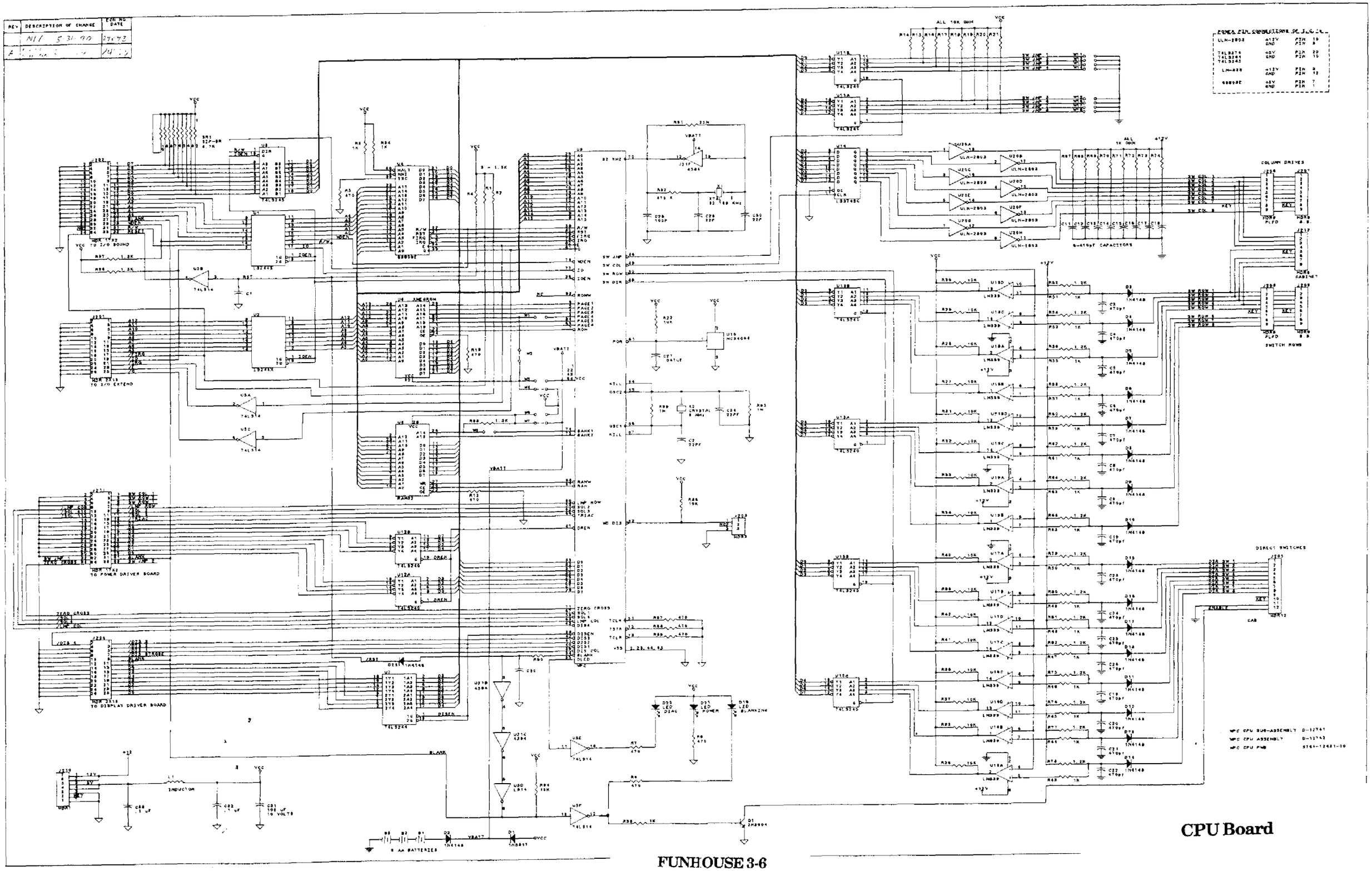
Standard Colors

Substitute colors

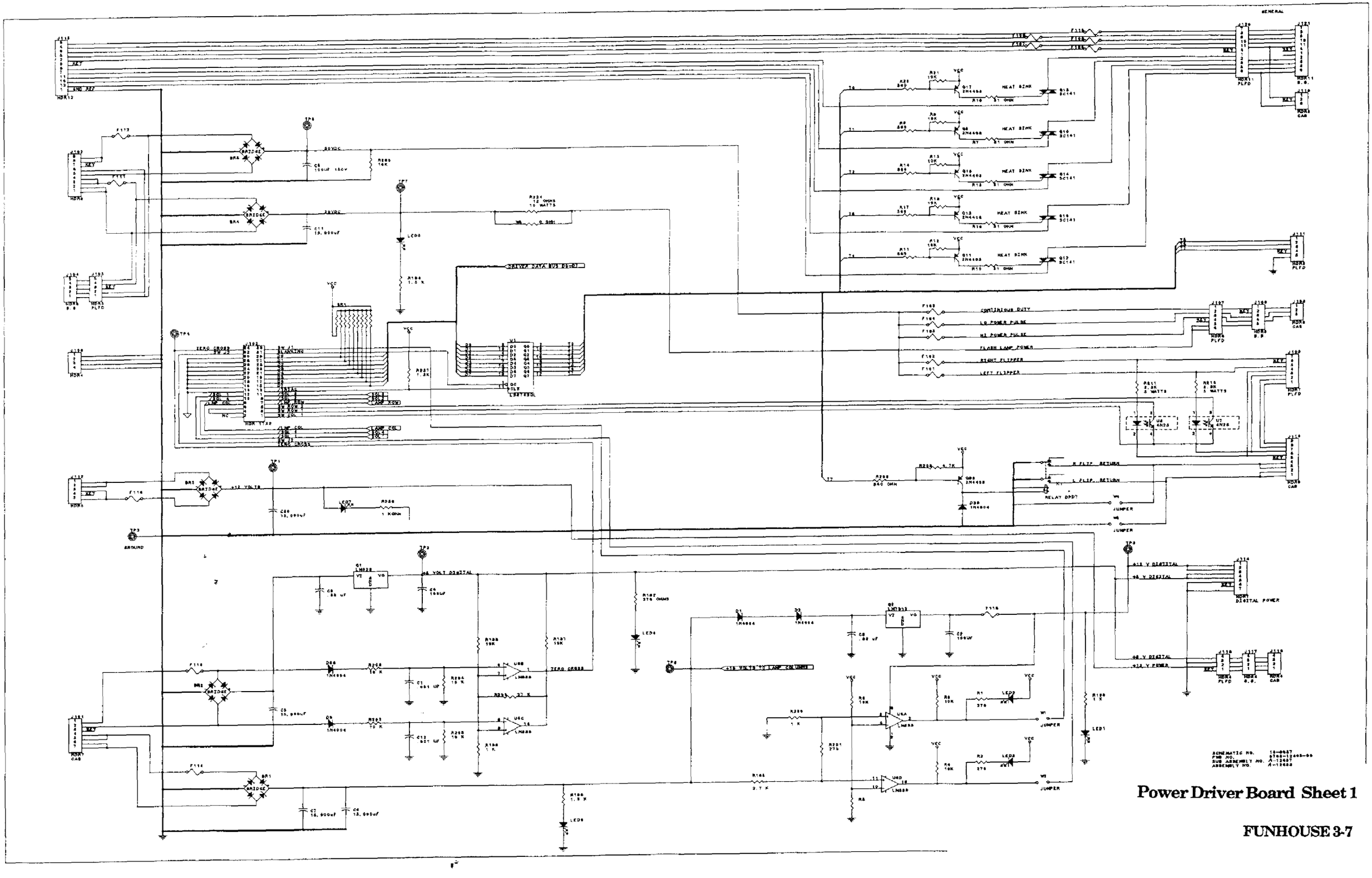
Some Coin Door may have substitute colors. Please follow the chart to the left if necessary.

Coin Door Interface Substitue Colors

REV	DESCRIPTION OF CHANGE	ECN NO DATE
	NII 5-31-90	29643
A	[illegible]	[illegible]

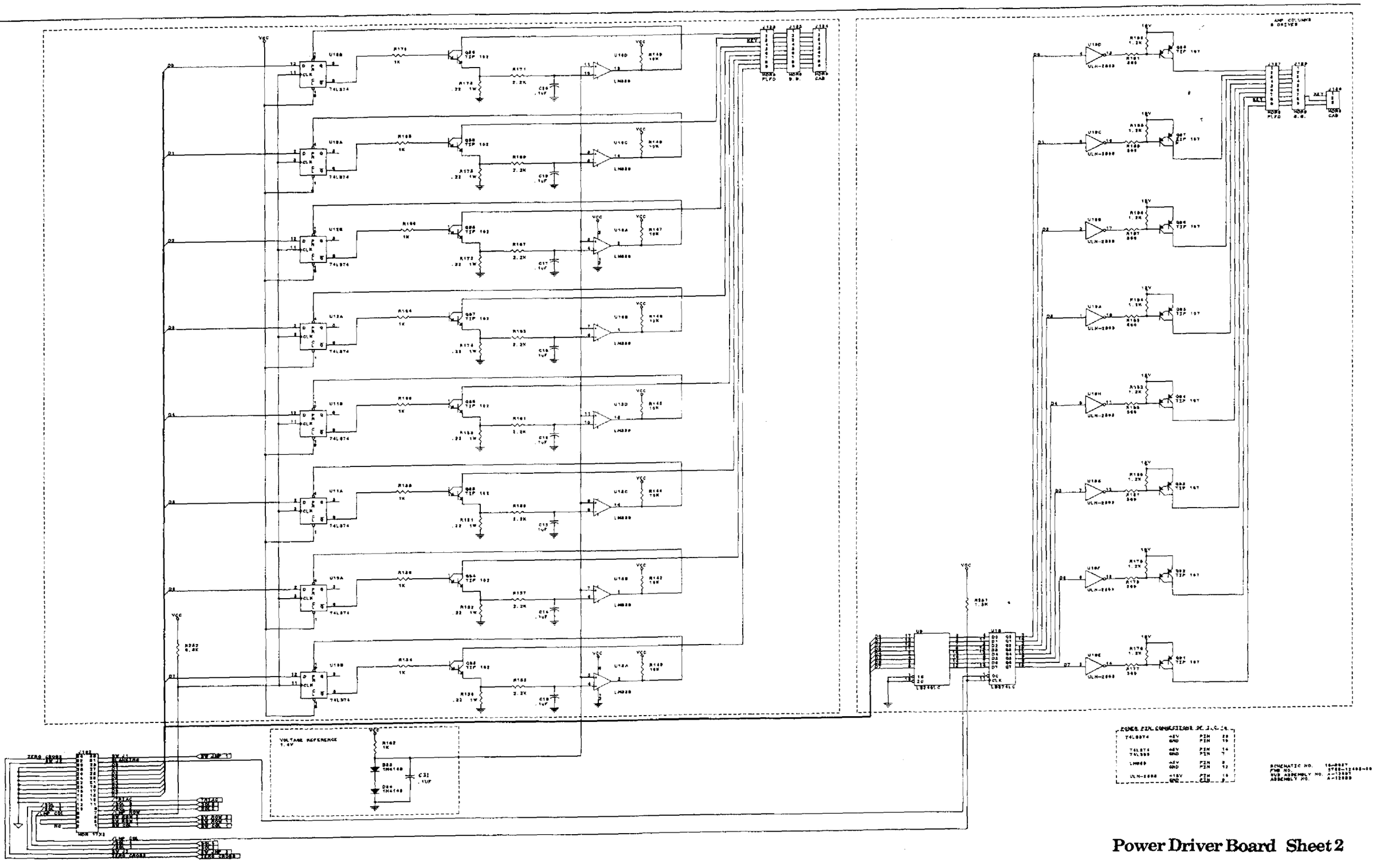


CPU Board

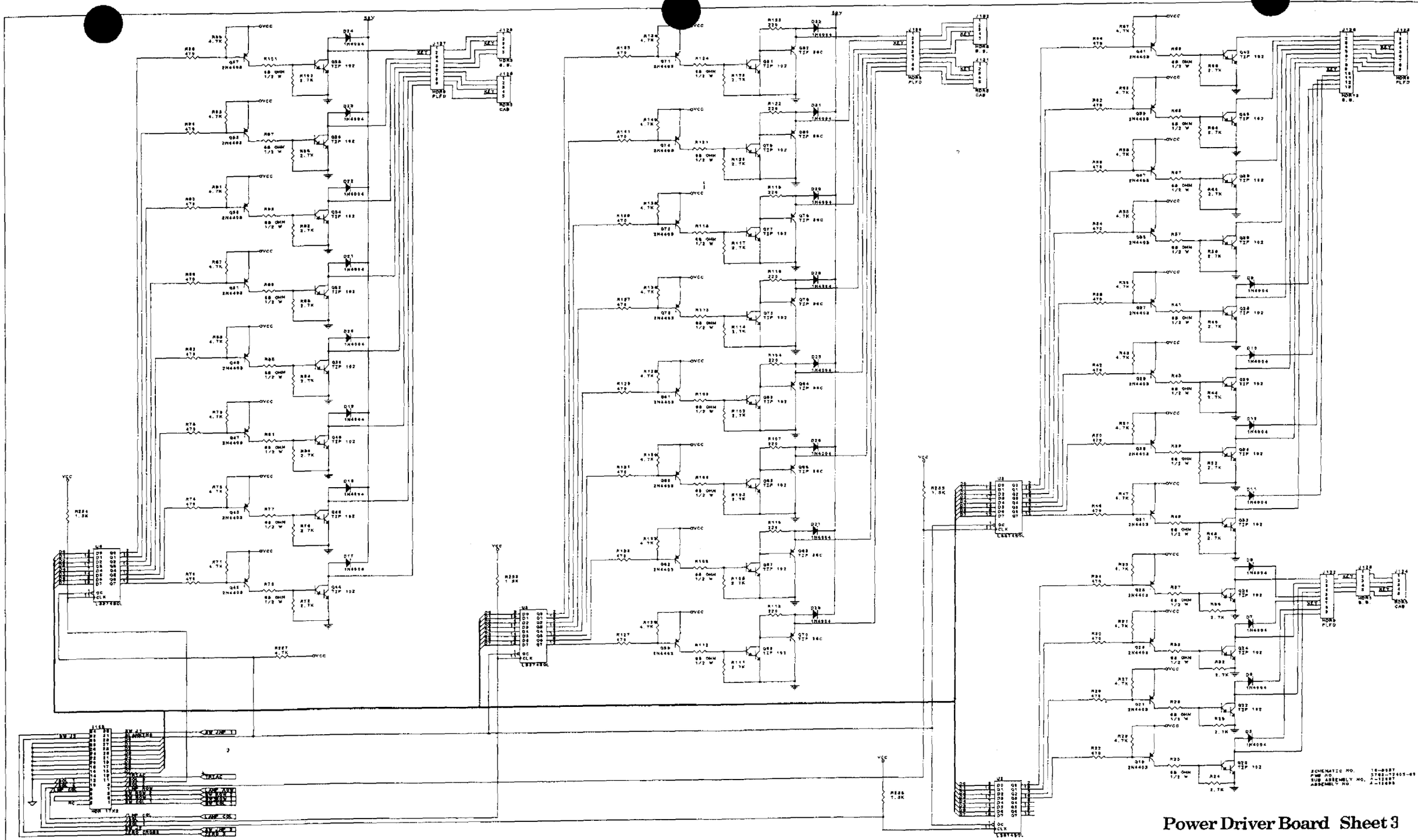


Power Driver Board Sheet 1

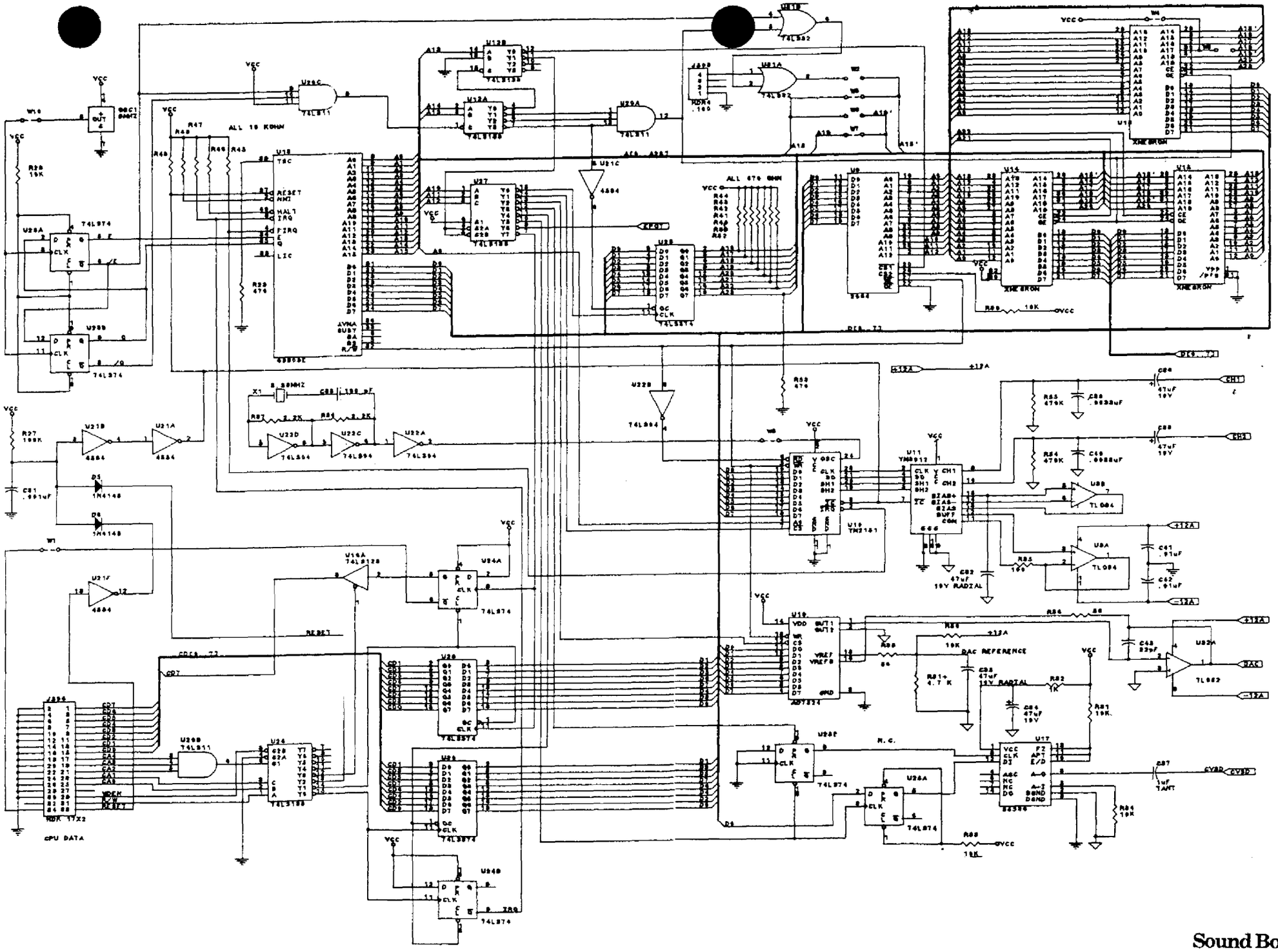
FUNHOUSE 3-7



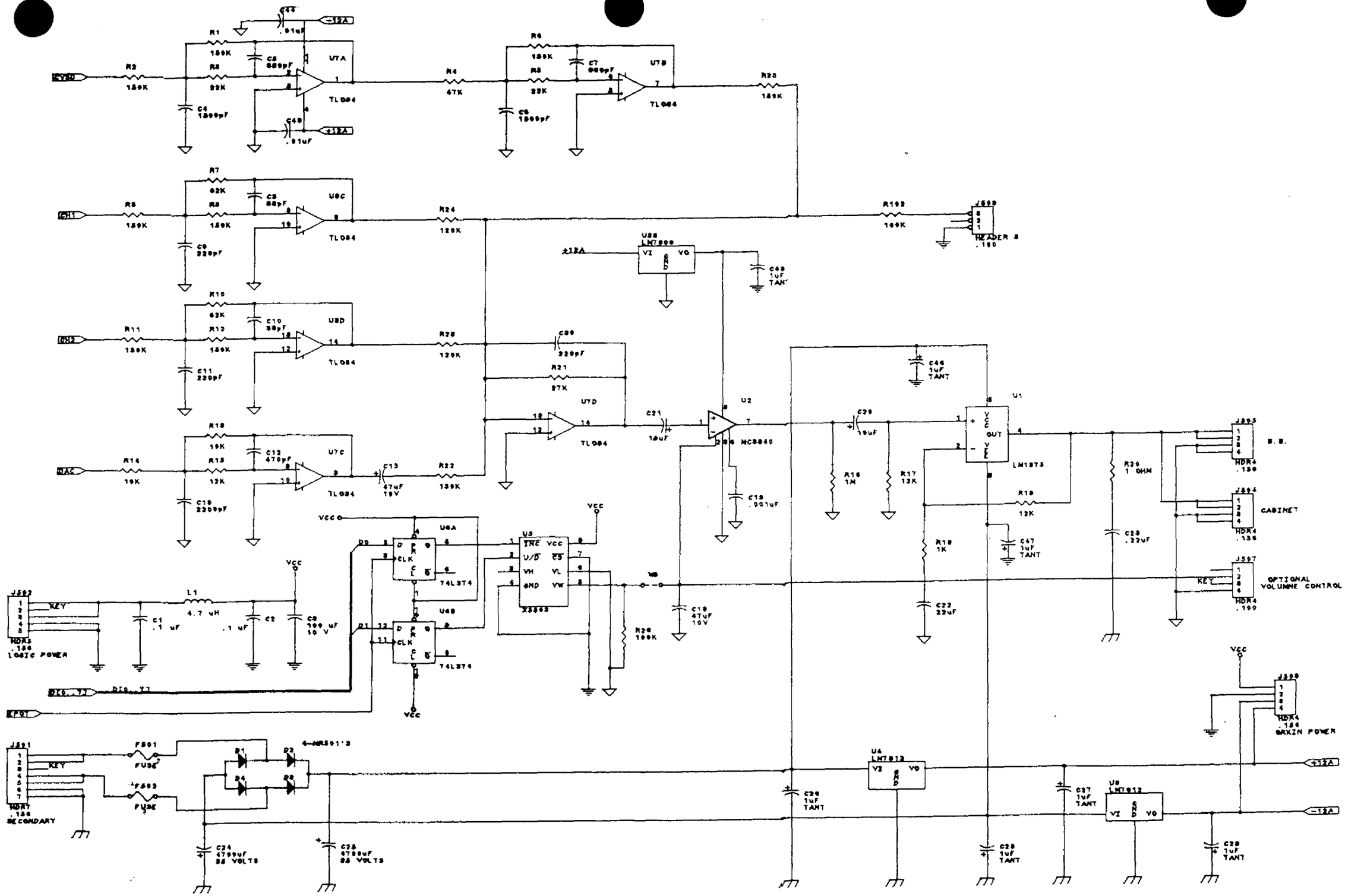
Power Driver Board Sheet 2



Power Driver Board Sheet 3

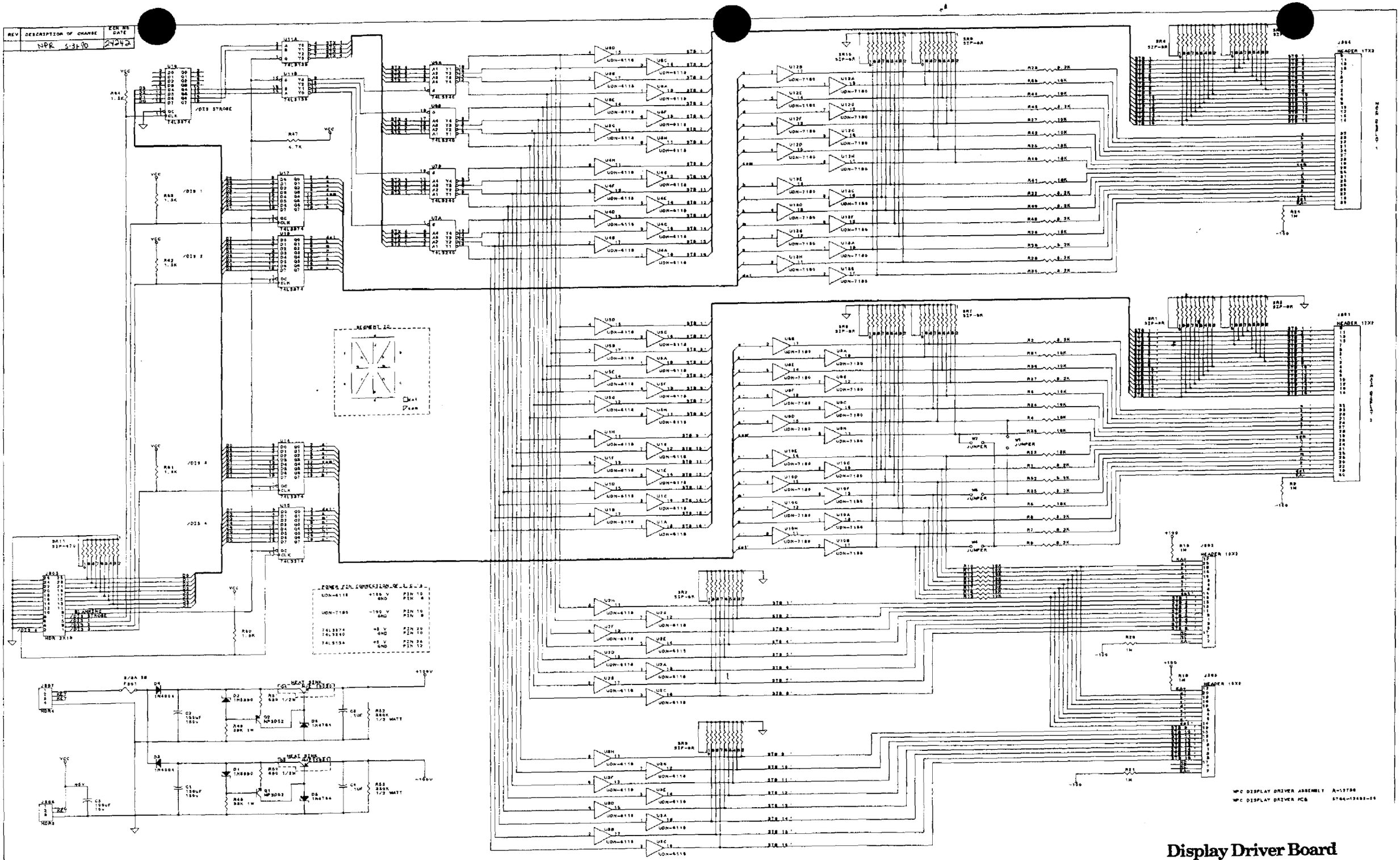


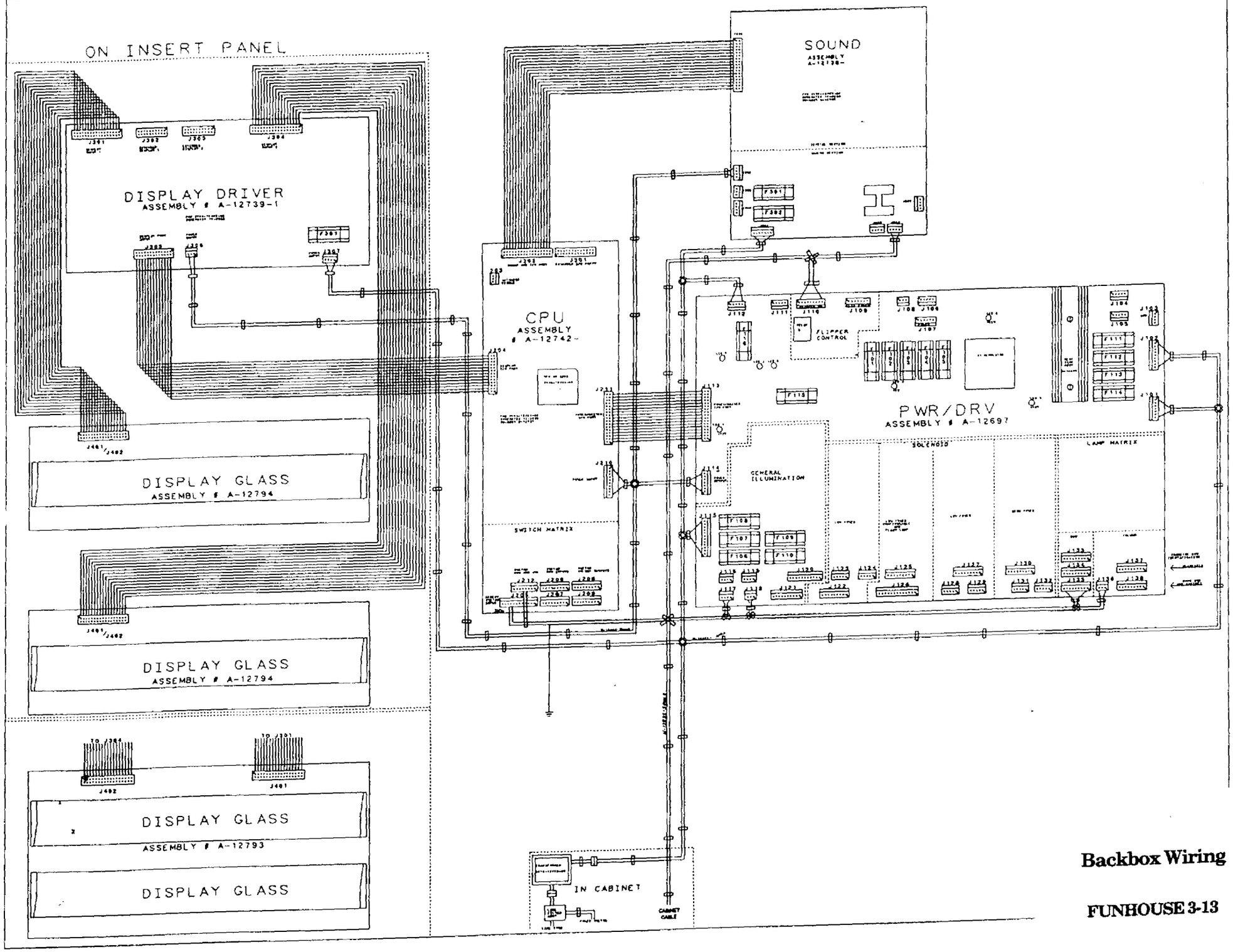
Sound Board Sheet 1



Sound Board Sheet 2

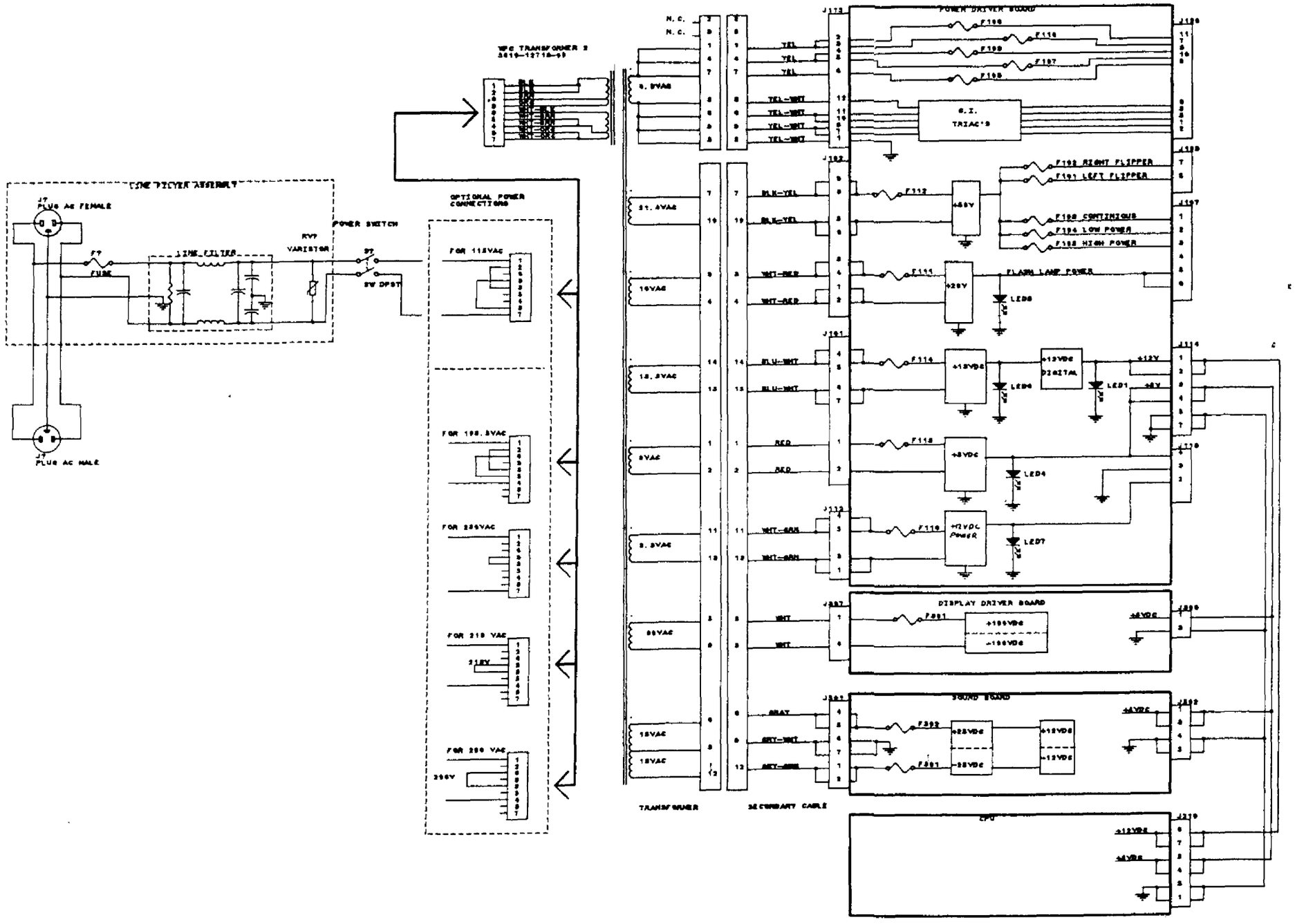
REV	DESCRIPTION OF CHANGE	ECN NO DATE
	NPR 5-31-90	24242



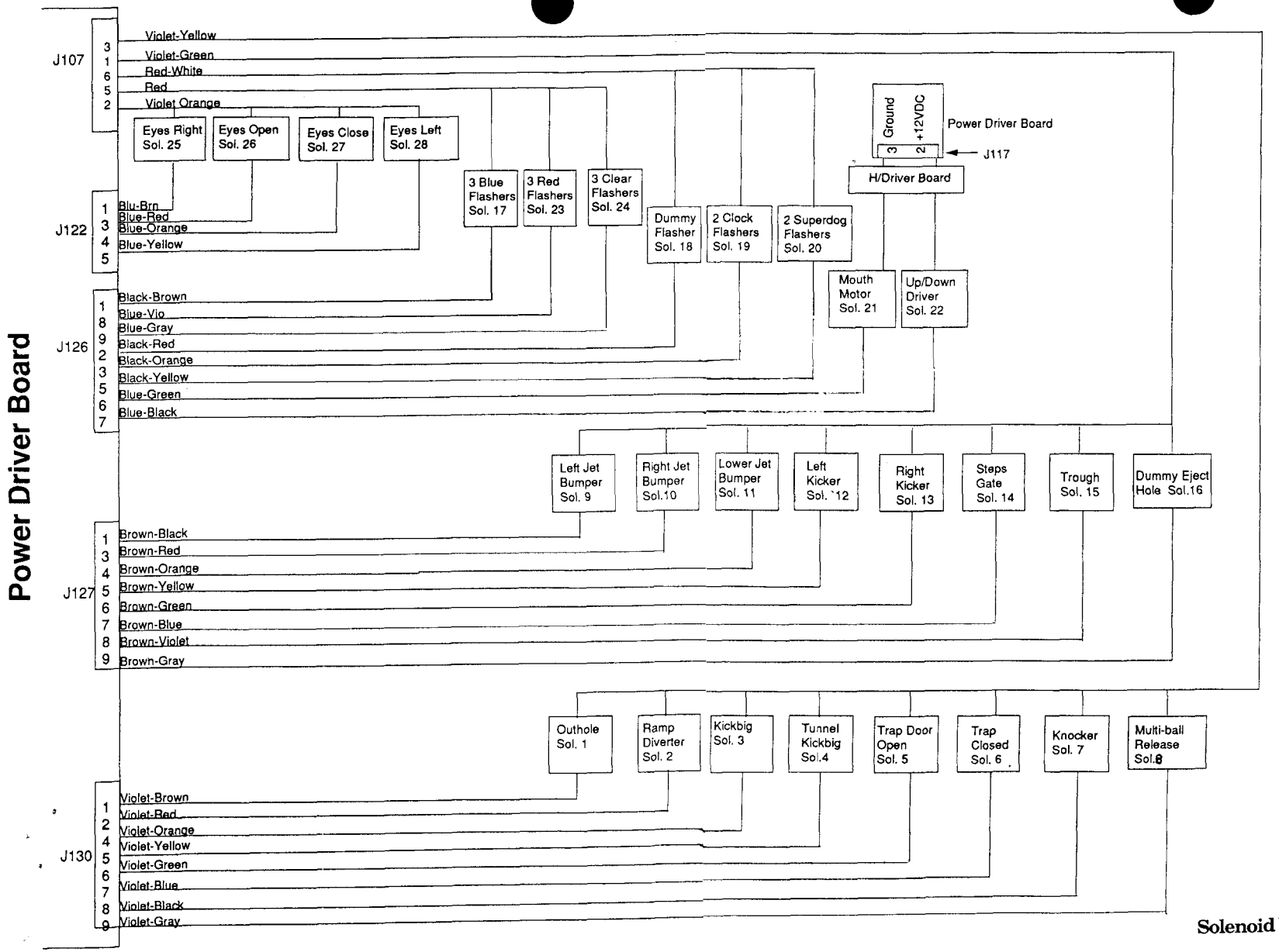


Backbox Wiring

FUNHOUSE 3-13



Power Wiring



Solenoid Wiring

Switch Circuits

Wire Color	Function		Connector from CPU To Playfield	To Cabinet	Transistor
Green/Brown	Column 1		J207-1	J212-1	U20-18
Green/Red	Column 2		J207-2	J212-2	U20-17
Green/Orange	Column 3		J207-3	J212-3	U20-16
Green/Yellow	Column 4		J207-4		U20-15
Green/Black	Column 5		J207-5		U20-14
Green/Blue	Column 6		J207-6		U20-13
Green/Violet	Column 7		J207-7		U20-12
Green/Gray	Column 7		J207-8		U20-11
White/Brown	Row 1		J209-1	J212-4	U18-11
White/Red	Row 2		J209-2	J212-6	U18-9
White/Orange	Row 3		J209-3	J212-7	U18-5
White/Yellow	Row 4		J209-4	J212-8	U18-7
White/Green	Row 5		J209-5		U19-11
White/Blue	Row 6		J209-7		U19-9
White/Violet	Row 7		J209 -8		U19-5
White/Gray	Row 8		J209-9		U19-7
Orange/ Brown	Direct 1	Left Coin		J205-1	U17-5
Orange/Red	Direct 2	Center Coin		J205-2	U17-7
Orange/Black	Direct 3	Right Coin		J205-3	U17-11
Orange/Yellow	Direct 4	4th Coin		J205-4	U17-9
Orange/Green	Direct 5	Escape/Service		J205-6	U16-9
Orange/Blue	Direct 6	Down/Vol Down		J205-7	U16-11
Orange/Violet	Direct 7	Up/ Vol Up		J205-8	U16-7
Orange/Gray	Direct 8	Enter/Test		J205-9	U16-5
Black		Ground		J205-10	
Orange/White		Enable		J205-12	

Lamp Circuits

Wire Color	Function	Connectors from Power Driver Board To Playfield	To Cabinet	Transistor
Yellow/Brown	Column 1	J138-1		Q98
Yellow/Red	Column 2	J138-2		Q97
Yellow/Orange	Column 3	J138-3		Q96
Yellow/Black	Column 4	J138-4		Q95
Yellow/Green	Column 5	J138-5		Q94
Yellow/Blue	Column 6	J138-6		Q93
Yellow/Violet	Column 7	J138-7		Q92
Yellow/Gray	Column 8	J138-9	J136-3	Q91
Red/Brown	Row 1	J133-1		Q90
Red/Black	Row 2	J133-2		Q89
Red/Orange	Row 3	J133-3	J133-3	Q88
Red/Yellow	Row 4	J133-5	J133-5	Q87
Red/Green	Row 5	J133-6	J133-6	Q86
Red/Blue	Row 6	J133-7	J133-7	Q85
Red/Violet	Row 7	J133-8	J133-8	Q84
Red/Gray	Row 8	J133-9	J133-9	Q83

Solenoid Circuits

Wire Color	Function		Connectors from Power Driver Board To Playfield	Transistor
Violet/Brown	Solenoid 1, High Power		J130-1	Q82
Violet/Red	Solenoid 2, High Power		J130-2	Q80
Violet/Orange	Solenoid 3, High Power		J130-4	Q78
Violet/Yellow	Solenoid 4, High Power		J130-5	Q76
Violet/Green	Solenoid 5, High Power		J130-6	Q64
Violet/Blue	Solenoid 6, High Power		J130-7	Q66
Violet/Black	Solenoid 7, High Power		J130-8	Q68
Violet/Gray	Solenoid 8, High Power		J130-9	Q70
Brown/Black	Solenoid 9, Low Power		J127-1	Q58
Brown/Red	Solenoid 10, Low Power		J127-2	Q56
Brown/Orange	Solenoid 11, Low Power		J127-4	Q54
Brown/Yellow	Solenoid 12, Low Power		J127-5	Q52
Brown/Green	Solenoid 13, Low Power		J127-6	Q50
Brown/Blue	Solenoid 14, Low Power		J127-7	Q48
Brown/Violet	Solenoid 15, Low Power		J127-8	Q46
Brown/Gray	Solenoid 16, Low Power		J127-9	Q44
Black/Brown	Flasher 1	No Diode	J126-1	Q42
Black/Red	Flasher 2	No Diode	J126-2	Q40
Black/Orange	Flasher 3	No Diode	J126-3	Q38
Black/Yellow	Flasher 4	No Diode	J126-4	Q36
Blue/Green	Special 1 Drive		J126-5	Q28
	Special 1 Diode	Diode Tie Back	J126-10	
Blue/Black	Special 2 Drive		J126-6	Q30
	Special 2 Diode	Diode Tie Back	J126-11	
Blue/Violet	Special 3 Drive		J126-7	Q34
	Special 3 Diode	Diode Tie Back	J126-12	
Blue/Gray	Special 4 Drive		J126-8	Q32
	Special 4 Diode	Diode Tie Back	J126-13	
Blue/Brown	Special 5 Drive		J122-1	Q26
	Special 5 Diode	Diode Tie Back	J122-5	
Blue/Red	Special 6 Drive		J122-2	Q24
	Special 6 Diode	Diode Tie Back	J122-6	
Blue/Orange	Special 7 Drive		J122-3	Q22
	Special 7 Diode	Diode Tie Back	J122-8	
Blue/Yellow	Special 8 Drive		J122-4	Q20
	Special 8 Diode	Diode Tie Back	J122-9	

General Illumination Circuits

		Connectors from Power Driver Board			
Wire Color	Function	To Playfield	To Cabinet	To Insert	Transistor
Green	Feed 1	J120-5		J121-5	Q12
Violet	Feed 2	J120-6	J119-3	J121-6	Q10
Brown	Feed 3	J120-1		J121-1	Q18
Yellow	Feed 4	J120-3		J121-3	Q14
Orange	Feed 5	J120-2		J121-2	Q16
White/Green	Return 1	J120-10		J121-10	F7
White/Violet	Return 2	J120-11		J121-11	F6
White/Brown	Return 3	J120-7		J121-7	F10
White/Yellow	Return 4	J120-9		J121-9	F8
White/Orange	Return 5	J120-8		J121-8	F9

Flipper Circuits

		Connectors from Power Driver Board
Wire Color	Function	To Playfield
Gray/Yellow	Left Flipper Power	J109-5
Blue/Yellow	Right Flipper Power	J109-7
Black/Blue	Upper Left Flipper	J109-1
Blue/Gray	Lower Left Flipper	J109-3
Black /Yellow	Upper Right Flipper	J109-2
Blue/Violet	Lower Right Flipper	J109-4
Black/Blue	Upper Left Flipper	J110-9
Blue/Gray	Lower Left Flipper	J110-7
Black/Yellow	Upper Right Flipper	J110-8
Blue/Violet	Lower Right Flipper	J110-6
Orange/Gray	Left Flipper Ground	J110-2, 1
Orange/ Violet	Right Flipper Ground	J110-4, 3

Power Circuits

		Connectors from Power Driver Board		
Wire Color	Function	To Playfield	To Cabinet	To Insert
Gray	Digital +5V	J117-4	J116-4	
Gray/Green	Switch +12V			
Gray/Yellow	Analog +12V	J117-2	J116-2	
Black	Ground	J117-3	J116-3	

Power Circuits

		Connectors from Power Driver Board	
Wire Color	Function	To Playfield	To Insert
Violet/Yellow	High Power 50V	J107-3	
Violet/Orange	Low Power 50V	J107-2	
Violet/Green	Other 50V	J107-1	
Red	Flasher 20V	J107-5	
Red/White	Flasher 20V	J107-6	
White/Blue	50VAC		
White/Blue	50VAC		
Black	Ground		J103-1 to 4

Logic Circuits

Wire Color	Function	
Ribbon Cable	Data	J201 Connector to /from Extended Board (optional)
Ribbon Cable	Data	J202 Connector to /from Sound Board
Ribbon Cable	Data	J204 Connector to/from Display Driver
		Connectors from Power Driver Board
Black	Ground	J210-1
Black	Ground	J210-3
Gray	+5VDC	J210-4
Gray	+5VDC	J210-5
Gray/Green	+12VDC	J210-6
Gray/Green	+12VDC	J210-7
Ribbon Cable	Data	J211

Display Circuits

Wire Color	Function	
Ribbon Cable	Data	J301 Connector to/from Dual Display Board (glass 1)
Ribbon Cable	Data	J304 Connector to/from Dual Display Board (glass 2)
Ribbon Cable	Data	J305 Connector to/from CPU
		Connector from CPU/Power Driver Board
Gray	+5VDC	J306-1
Black	Ground	J306-3
		Connector from Transformer
White	100VAC	J307-1
White	100VAC	J307-4

FUNHOUSE Lamp Matrix

Yellow (B+) → Red

Row \ Column	1 Yellow-Brown	2 Yellow-Red	3 Yellow-Orange	4 Yellow-Black	5 Yellow-Green	6 Yellow-Blue	7 Yellow-Violet	8 Yellow-Gray
1 Red-Brown	(1) Gangway 75, 000 (Left) 11	(9) Clock 45 Minutes 21	(17) Clock 40 Minutes 31	(25) Clock 9 o' clock 41	(33) Lower Left Jet Bumper 51	(41) Left & Inside Rt Flipper Lanes (x 2) 61	(49) Magic Mirror Lights Extra Ball 71	(57) Million Plus 81
2 Red-Black	(2) Gangway 100, 000 12	(10) Clock 8 o' clock 22	(18) Clock 35 Minutes 32	(26) Clock 7 o' clock 42	(34) Upper Left Jet Bumper 52	(42) S-T-E-P "S" 62	(50) Upper Right Jet Bumper 72	(58) Special Outlanes (x 2) 82
3 Red-Orange	(3) Gangway 150, 000 13	(11) Clock 6 o' clock 23	(19) Clock 30 Minutes 33	(27) Clock 5 o' clock 43	(35) Superdog Lamp (x 2) 53	(43) Trap Door Bonus 63	(51) S-T-E-P "P" 73	(59) Trap Door Frenzy 83
4 Red-Yellow	(4) Gangway 200, 000 14	(12) Clock 25 Minutes 24	(20) Clock 20 Minutes 34	(28) Clock 4 o' clock 44	(36) Steps Lights Frenzy 54	(44) Ramp Scores 250, 000 64	(52) Magic Mirror Lights Million 74	(60) Ramp "Steps" Lamp 84
5 Red-Green	(5) Gangway 250, 000 15	(13) Clock 15 Minutes 25	(21) Clock 3 o' clock 35	(29) Clock 2 o' clock 45	(37) Steps Lights Extra Ball 55	(45) S-T-E-P "T" 65	(53) Magic Mirror Lights Jet Bumpers 75	(61) Magic Mirror Arrow 85
6 Red-Blue	(6) Gangway Lights Extra Ball 16	(14) Clock 10 Minutes 26	(22) Clock 1 o' clock 36	(30) Clock 5 Minutes 46	(38) Steps 500, 000 56	(46) Upper Left Gangway Lane 66	(54) Magic Mirror Lights Superdog 76	(62) S-T-E-P "E" 86
7 Red-Violet	(7) Shoot Again 17	(15) Clock 12 Minutes 27	(23) Clock 11 o' clock 37	(31) Clock 55 Minutes 47	(39) Ramp Overhead Lamp 57	(47) Extra Ball Lamp 67	(55) Magic Mirror Opens Gate 77	(63) Million 87
8 Red-Gray	(8) Steps Open (Gate) 18	(16) Clock 0 Minutes 28	(24) Clock 50 Minutes 38	(32) Clock 10 o' clock 48	(40) Right Gangway Overhead Lamp 58	(48) Lock 68	(56) Magic Mirror Lights Quick Multi-ball 78	(64) Start Button (Cabinet) 88

FUNHOUSE Switch Matrix

White → Green

Dedicated Grounded Switches	Row \ Column	1 Green-Brown	2 Green-Red	3 Green-Orange	4 Green-Yellow	5 Green-Black	6 Green-Blue	7 Green-Violet	8 Green-Gray
Orange-Brown (1) Left Coin Chute D1	1 White-Brown	(9) Right Flipper 11	(17) Slam Tilt 21	(25) S-T-E-P "P" (Lower Right) 31	(33) Left Slingshot (Kicker) 41	(41) Dummy Jaw (Opto) 51	(49) Rt Inside Flipper Return Lane 61	(57) Rt Outside Flipper Return Lane 71	(65) 81
Orange-Red (2) Center Coin Chute D2	2 White-Red	(10) Left Flipper 12	(18) Front Door 22	(26) Top Superdog Standup Target 32	(34) Left Flipper Return Lane 42	(42) Right Outlane 52	(50) Right Ball-shooter 62	(58) Left Trough 72	(66) 82
Orange-Black (3) Right Coin Chute D3	3 White-Orange	(11) Start Button 13	(19) Not Used 23	(27) Upper Left Gangway Rollunder 33	(35) Left Outlane 43	(43) Right Slingshot (Kicker) 53	(51) Right Trough 63	(59) Outhole 73	(67) 83
Orange-Yellow (4) 4th Coin Chute D4	4 White-Yellow	(12) Plumb Bob Tilt 14	(20) Test Position, Always Closed 24	(28) Bottom Superdog Standup Target 34	(36) Wind Tunnel Hole 44	(44) S-T-E-P "T" (Upper Left) 54	(52) S-T-E-P "E" (Upper Center) 64	(60) Center Trough 74	(68) 84
Orange-Green (5) Normal Function: Service Credits / Test Function: Escape D5	5 White-Green	(13) Steps Lights Frenzy 15	(21) Lock Mech Right 25	(29) Steps Track Lower 35	(37) Trap Door 45	(45) Steps Superdog (opto) 55	(53) Dummy Eject Hole 65	(61) Upper Right Loop Switch 75	(69) 85
Orange-Blue (6) Normal Function: Volume Down / Test Function: Down D6	6 White-Blue	(14) Upper Ramp Switch 16	(22) Steps Lights Extra Ball 26	(30) Steps 500, 000 36	(38) Rudys Hideout Kickbig 46	(46) Ramp Entrance 56	(54) Upper Right Gangway Lane 66	(62) Trap Door Closed 76	(70) 86
Orange-Violet (7) Normal Function: Volume Up / Test Function: Up D7	7 White-Violet	(15) S-T-E-P "S" (Lower Left) 17	(23) Lock Mech Center 27	(31) Center Superdog Standup Target 37	(39) Left Ball-shooter 47	(47) Jet Bumper Lane 57	(55) Lower Right Drop Hole 67	(63) Upper Right Jet Bumper 77	(71) 87
Orange-Gray (8) Normal Function: Begin Test / Test Function: Enter D8	8 White-Gray	(16) Upper Left Jet Bumper 18	(24) Lock Mech Left 28	(32) Steps Track Upper 38	(40) Ramp Exit Track 48	(48) Tunnel Kickout 58	(56) Lower Jet Bumper 68	(64) 78	(72) 88

WARNINGS & NOTICES

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